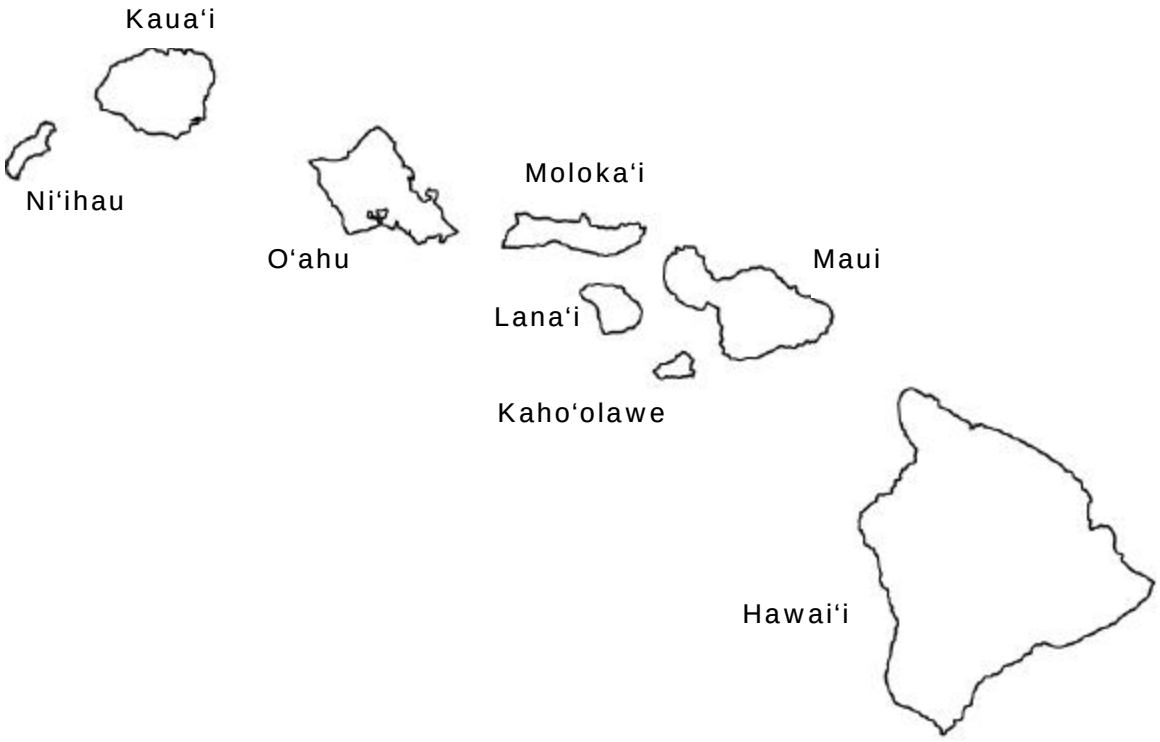
S T A T E O F H A W A I I
INFORMATION TECHNOLOGY

O V E R V I E W



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EXECUTIVE OVERVIEW

Both government and information technology are undergoing profound changes which present lawmakers and administrators with dual challenges: enhancing services with fewer resources and improving economic efficiencies with the deployment of technology. These two challenges mandate the use of information technology as a tool to support the cost-effective achievement of program objectives in every agency and department of state government.

Global business objectives of government include, but are not limited to, the following:

- Reorganizing and reengineering government operations to become more efficient and productive in the delivery of services, thereby facing the reality of economic constraints.
- Delivering services in a manner that is consistent with those that the public has come to expect from other service industries (timeliness, convenience, customer-orientation).
- Providing for the implementation of government mandates, both federal and State, in an efficient, effective, and timely manner.
- Ensuring public access to government information in a convenient, timely, and equitable manner.

Clearly, the proper application of technology is a key to the accomplishment of these objectives and must be recognized as “part of the solution”. This perspective must be reinforced by information technology planning which is integrated with the comprehensive planning activities of State agencies and departments. The activities and services of the Information and Communication Services Division (ICSD) are a critical and integral part of each agency’s daily operation in providing direct services to the public. (A summary of these services is provided in Appendix 1.)

In response to the directions and requirements of all State agencies, the ICSD has prepared this Information Technology (IT) Overview. This overview sets the directions and goals for the next few years while the ICSD itself undergoes its transformation and reorganization into an entity that improves support to Hawaii State Government. Concurrent with the development of this IT Overview, the ICSD is in the process of collecting planning information from the State agencies and departments concerning their current and future IT requirements. This planning process is expected to lead to the development of a comprehensive, detailed IT Master Plan for Hawaii State Government.

The services provided by the ICSD have surpassed the directions and goals that were published in the 1988 Master Plan for Distributed Information Processing and Information Resource Management. A few of these services are described below:

- The State's information highway, called the HAwaii Wide Area Integrated Information Access Network (HAWAIIAN), was implemented and enhanced. The HAWAIIAN is the State's private telecommunications system that links the State office buildings on all the major islands. The HAWAIIAN is a high-speed digital network used to support the transmission of data, voice, video, image, radio, and signaling communications for the State of Hawaii. Appendix 2 shows the microwave path for the HAWAIIAN and Appendix 3 shows the fiber optic backbone on each major island. On Oahu, the HAWAIIAN encompasses the area from Kalani High School in the east to Leeward Community College at Waianae in the west. On the neighbor islands, it covers areas between the State Office Buildings and a campus of the University of Hawaii, including its Community Colleges.

  The HAWAIIAN reduced the cost of telecommunication and telephone services, enabled all departments to become part of the State's telecommunications network, and now handles more than 1,000,000 online transactions per day. Over 50% of these transactions are for public health and safety application systems.

- More than 12,400 requests for telecommunication services were processed over the past five years. These requests cover a wide range of services such as communication line connectivity, installation of additional lines and equipment, network designs, and radio requirements and services.

- Application services were provided to all agencies to support their use of IT including application system design and development, technical support for the professional data processing staffs and IT users, and guidance and assistance on PC hardware, software, and office automation. This has resulted in better compatibility among departmental applications, facilitated training, and enabled network interconnectivity.

- The public was provided electronic access to a wealth of government information. The initial system, which is still used today, was called Hawaii FYI. Hawaii FYI at its peak offered more than 120 information services. Today, many of these services are offered on the Internet. When the Internet became a viable delivery system, the ICSD collaborated with the Department of Business, Economic Development and Tourism, and the Department of Transportation to design and develop

the Hawaii State Government Home Page. The web address for this home page is “http://www.state.hi.us”.

In May 1997, the home page received 371,215 hits, its highest count thus far, which is an increase of 2,905% in just 21 months. The application of the Internet provides State agencies with another way to deliver services to the citizens of the State.

- The ICSD along with the Office of Planning developed the infrastructure for the statewide Geographic Information System (GIS). Over 20 agencies now use the GIS for various purposes such as planning, shoreline management, and reapportionment of election districts and precincts.
- The State of Hawaii Electronic Mail (SOHEM) network was implemented which enables 15 departments, who use different vendor electronic mail software packages, to transparently send and receive mail via the State’s telecommunication infrastructure.
- Local area network (LAN) consulting and support services were initiated and provided on 24 projects, which reduced or eliminated departmental expenditures for consultants and installers.
- The ICSD continued to support 93 application systems for 14 State departments and agencies. Some of these application systems are: the Comprehensive Net Income Tax system, the Unemployment Insurance Tax and Benefits systems, the Professional and Vocational Licensing system, the State Cash Management Improvement system, the Central Warrant Writing system, and the Statewide Payroll system.

  These 93 application systems have over 8,300 programs that use over 3,000 files. There are 10 files with over 1,000,000 records. The largest file has over 6,000,000 records. Nine of these application systems are identified as essential, thus the ICSD staff may be called at any hour, 24 hours a day, seven days a week. More than 2,900 service requests were received over the past six years to support these applications.
- Databases supported and maintained on the host computers are accessed daily by 22 departments and agencies including the Department of Education, Legislative Reference Bureau, Office of Hawaiian Affairs, Ombudsman, and the University of Hawaii.
- Host computer systems have been upgraded to meet the continuing and expanding requirements of State agencies. The upgrade to the newer CMOS mainframe computers also reduced the cost of operations while providing 40% more capacity.

- The State's video conference centers (VCC) were designed and implemented. The VCCs have become a very important form of communication for departments and agencies, and have contributed to significant savings in travel costs. The number of usage hours increased 739% from 201 hours in 1992 to 1,487 hours in fiscal year 1997.
- Through September 30, 1994, training was provided to all departments and agencies in all branches of government to improve their understanding and ability to use information technologies and its applications effectively. More than 11,000 employees attended the ICSD classes. The ICSD also collaborated with the University of Hawaii to develop a graduate certificate program in Telecommunications and Information Resource Management to address the lack of adequate education in this area. More than 100 working individuals from State government have graduated and many now hold key positions in both the State and private sectors.
- The State's new telephone system was implemented and most of the State buildings were wired with high-speed communication lines.
- The ICSD negotiated and worked with personal communication system (PCS) providers to relocate State-owned microwave equipment to other frequency bands; thus, providing equipment and facility upgrades worth approximately $4,000,000 at no cost to the State. This cooperative endeavor allowed the PCS providers to establish business units and begin initial operations in an earlier timeframe, promoted competition in the offering of digital cellular services, and increased the economic base in Hawaii.
- As the central information technology and telecommunications agency for the Executive Branch of the State of Hawaii, the ICSD coordinates and participates on various councils and committees that involve state agencies, various government entities and public safety providers who use telecommunications and information technologies statewide. These councils, committees, and government entities include:
  - Telecommunications and Information Technology Coordination and Policy Advisory Council;
  - Hawaii Educational Networking Consortium;
  - National Association of State Information Resource Executives;
  - National Association of State Telecommunications Directors;
  - The Legislature;
  - The University of Hawaii and the Department of Education;
  - The Judiciary;

- The Rainbow Council; and
- The Internal Revenue Service.

The above services are just a small part of what was done or is underway to use information technologies effectively in Hawaii State Government; there is much more that needs to be done.

Goals

The infrastructure and central support services provided by the ICSD are crucial to the on-going operations of existing application systems, and to the development and implementation of new large, complex, statewide systems such as payroll, human resources (personnel), employees' retirement, financial accounting, health fund, and fixed assets. These new statewide systems must be well coordinated, interconnected, and interoperable if they are to be effective, efficient, and universally available to State agencies in all locations.

Because of these kinds of requirements, the ICSD needs to improve and expand its services to better meet the short- and long-term needs of Hawaii State Government and the citizens of Hawaii. Some of the major goals proposed by the ICSD to improve and expand its services are:

- ★ Satisfy increasing requirements for telecommunications bandwidth to provide data, voice, video integration, and image processing services.
- ★ Satisfy agency requests for new or replacement telephone sets and systems.
- ★ Continue support of public safety programs and administer Public Safety radio frequencies, policies, and procedures.
- ★ Improve telecommunications emergency preparedness by developing response and recovery plans in accordance with State Civil Defense Plans.
- ★ Improve public access to State government information through expanded Internet access and data warehousing.
- ★ Improve government operations with information technologies.
- ★ Encourage the involvement of end-users in the application development process.
- ★ Expand support for information systems development.
- ★ Improve support for information technology users.
- ★ Improve the reliability of basic computer and network operations.
- ★ Improve efficiency and price/performance of the central data center while accommodating workload growth.

- ★ Expand the services provided to support the implementation and use of open systems and enterprise-wide client/server environments.
- ★ Initiate and coordinate the development, implementation, and update of statewide strategic directions and operational plans.
- ★ Revise or develop statewide information technology standards and guidelines.
- ★ Monitor and foster the State's progress to become Year 2000 compliant.
- ★ Provide input for improved information technologies and telecommunications procurement.
- ★ Provide project management for statewide information technology projects.
- ★ Provide for the training of all state IT staffs in the application of current and new technologies.

In addition to the above goals, emerging technologies provide opportunities for reengineering government through productivity and efficiency improvements, improving access to information and government services, and potentially reducing the cost of government. Some of the emerging technologies that the ICSD is or will be researching in the next few years are desktop videoconferencing, Internet, Intranets, ATM switched networks, wireless LANs, electronic commerce, electronic data interchange, electronic benefits transfer, workflow systems, document management systems, and the global positioning system.

Challenges

The attainment of any worthy goal also comes with its own challenges and issues. Briefly, the key challenges and issues that the ICSD foresees are:

- ❖ ***Interdepartmental cooperation and sharing of technical information.***
  Departments and agencies have been allowed to develop their own capabilities for implementing and managing their IT assets. Technical solutions, capabilities, and expertise are repeated across many departments, at no small expense. Everyone "reinvents the wheel" and each department tries to establish its own technical experts and pool of knowledge. This increases IT costs overall. There is a need to manage and coordinate efforts statewide to reduce the total cost of ownership for IT while continuing to position IT services and support such that employees and citizens have access to the information they need when they need it.
- ❖ ***Strategic IT planning.***

The State's IT program is an asset to nurture and optimize. It does not exist for itself but for the various State programs that serve the public. IT should not be regarded as just an administrative support function but also an essential mechanism for providing departments and agencies with needed services. Strategic business planning and IT planning are currently conducted independently. With no direct participation in making strategic business decisions, IT planning can only be reactive, and opportunities for creative application of IT may be lost. IT planning is an ongoing process, requiring direct user involvement/coordination, to ensure that all IT systems, services, and activities are consistent with the overall direction of Hawaii State Government.

- ***IT resource limitations.***

  Today, the ICSD's computers and communication services and capabilities are an integral part of almost every State agency's daily operation and its delivery of services to Hawaii's citizens. Budget and personnel cuts have severely hampered the ICSD's capability to provide critical and essential services. While more than 154 positions and 40% of the operating budget has been cut since fiscal year 1992, the State's total cost of ownership (the sum of expenditures by all departments) for computers and communications has increased. The amount of work for the ICSD still continues to increase due to Year 2000 compliance requirements, expanding computer and automation needs and changes, and the funding of new system developments in state agencies.

- ***Procurement laws.***

  The current procurement laws do not address the acquisition of computer products such as hardware and software. Hardware and software are constantly changing, often at a rate that makes current technology obsolete within a very short period of time. Administrative procurement rules and definitions, processing time frame requirements, and statutory restrictions limit our ability to acquire new technology quickly and efficiently. The State Procurement Office and the Department of the Attorney General must continue to improve the process for acquiring computer and communication hardware, software, facilities, and related products and services to encourage a more effective business-oriented environment.

- ***IT staff***

  The austere fiscal condition of the State has been harsh on both budget and staffing levels. To use our remaining valuable and limited human resources in more creative ways, reengineering government operations becomes essential. Nearly all reengineering efforts rely on IT to provide the "streamlining" of the business processes. The need for a skilled IT

staff to facilitate the reengineering effort becomes imperative. Therefore, the ICSD must continue, even with budget cuts, to find ways to enhance the knowledge, skills, and expertise of the State's IT staff in order to keep up with industry trends, advances in the use of computer and communication techniques and methods, and to provide hands-on training experiences in the implementation of new types of information and communication systems.

- ***Year 2000 Compliance Project, new laws, and mandatory requirements.***

  New legislation and laws of the Federal and State governments cannot be avoided and must be implemented. In a similar vein, the effort of the State and its IT staffs to become Year 2000 compliant cannot be avoided and must be implemented. Lack of funding for additional positions, even temporary positions, requires the same IT staff to do both year 2000 work and mandatory requirements work. A moratorium on all new development that is not required by law may be necessary in order to free up resources for the Year 2000 Compliance Project.

Conclusion

In conclusion, rapid advances in technology, decreased costs of computers and components, and increased reliance on computers in the work place have led to dramatic increases in the use of computer and communication systems in Hawaii State Government. Because of these trends, new strategies and programs need to be developed and implemented.

Over the years, the cost of the ICSD's services has been far less than commercially provided services. The cost of services provided to State programs have averaged at least two to three times less than the commercial sector. The ICSD, given the necessary resources to implement the information technology initiatives described in this document, will be better prepared to provide the timely delivery of cost-effective applications and communication services to our departments, agencies, and citizens into the 21st century.

INTRODUCTION

The ICSD is the central organization within the Executive Branch of Hawaii State Government that carries out the responsibilities for statewide data processing, information systems, and telecommunications that the Governor has delegated to the Comptroller in the following documents:

- Administrative Directive No. 77-2, Policy on Electronic Data Processing Services in the Hawaii State Government, as amended by Executive Memorandum No. 93-11.
- Administrative Directive No. 87-1, Policy Governing Acquisition and Utilization of Telecommunications Services and Facilities.

The objective of these policies is to improve the management and operation of all State agencies by providing effective, efficient, coordinated, and cost-beneficial computer and telecommunication services such that State program objectives may be more efficiently achieved.

On July 1, 1997, in accordance with Act 126, Session Laws of Hawaii, Regular Session 1995, the ICSD and the responsibilities for statewide data processing, information systems, and telecommunications were transferred from the Director of the Department of Budget and Finance to the Comptroller of the Department of Accounting and General Services.

The ICSD has prepared this document to provide an update on the State of Hawaii's Information Processing and Communication Programs in the Executive Branch of Hawaii State Government. Part 1 contains a summary of the support services provided and the progress made relative to the directions and programs that were published in the 1988 Master Plan for Distributed Information Processing and Information Resource Management. Part 2 contains the directions and goals that the Information and Communication Services Division (ICSD) has identified as necessary, or is in the process of implementing, to continue to provide cost-effective information technology programs to support and maintain State operations.

Concurrent with the development of this IT Overview, the ICSD is in the process of collecting planning information from the State agencies and departments concerning their current and future IT requirements. This planning process is expected to take at least one year before a comprehensive, detailed IT Master Plan is developed for Hawaii State Government.

PART 1 - SUPPORT SERVICES PROVIDED

The Information and Communication Services Division (ICSD) provides essential computer and telecommunication support services for agencies within Hawaii State Government.

The ICSD strives to increase the effectiveness and efficiency of government operations and services, which benefits both the government agencies and citizenry of Hawaii, through the prudent, cost-effective use of computer/information technologies.

To carry out its mission, the ICSD continues to build on the foundation and define the objectives and directions of the following areas:

- Telecommunications Infrastructure and Physical Connectivity, which is:

  The transmission of data, voice, video, image, radio, etc., using fast, reliable, efficient, cost-effective network(s) which will enable State agencies to share information 24 hours a day, seven days a week.

- Computer Application Services, which is:

  The development and maintenance of computer application systems using carefully selected system development methodologies, hardware, software, and new technologies which improve development productivity.

- Computer and Network Operations, which is:

  The support of the State's distributed processing environment with centralized computer and network services which are reliable and available 24 hours a day, seven days a week.

- Information Resource Management and Administrative Services, which is:

  The coordination of services, standards, and policies to ensure that information is treated as an important State resource that must be managed, protected, and maintained as a valuable asset.

Telecommunications Infrastructure and Physical Connectivity
(for Data, Voice, Video, Image, and Radio Transmissions)

The ICSD provides cost-effective telecommunications services and support to State agencies in the Executive, Legislative, and Judicial Branches. The scope of the ICSD's services covers data, voice, video, image, radio, and signal communications.

Hawaii State Government's telecommunications system is provided by the HAwaii Wide Area Integrated Information Access Network (HAWAIIAN) with its interisland digital microwave and intraisland fiber optic Synchronous Optical NETwork (SONET) backbones, and the statewide multi-protocol router network. The HAWAIIAN also incorporates the fiber network implemented through the cable television franchise agreements that were negotiated by the Department of Commerce and Consumer Affairs. The ICSD's services and support includes:

- Statewide connectivity to the State's central host computer systems.
- Coordination of requests to make changes to the network such as moving, changing, or adding equipment and circuits.
- Telecommunication network consultation and design to connect all types of computers and computer-related equipment.
- Administrative and technical support of State telephone services.
- Consultation for telephone systems such as key system units (KSU).
- State video conferencing network.

- Interactive video design and technical support.
- Radio engineering and technical support/consulting which includes maintenance, physical monitoring, review, and coordination of adjustments to microwave towers, facilities, radio equipment, and related support requirements at 12 statewide transmission/receive sites, most of which are located in remote mountain areas.
- Radio frequency coordination and licensing with the Federal Communications Commission (FCC) for public safety use and local government use.
- Communications infrastructure and cable plant design for State buildings.
- Consultation on impact of telecommunications law changes and deregulation.
- LAN design, consultation, installation, implementation, and problem resolution services to all State agencies.
- Consultation services on Internet access, use, and publishing.
- Operation of an Assistance Center which provides first-level support for addressing problems with telephones or connectivity to the State's computers; also, monitors the statewide data network for problem determination and resolution.
- Disaster recovery of telecommunications services for the State of Hawaii in accordance with Civil Defense Plans and alternative renting to provide services.

Requests for telecommunication services totaled more than 12,400 requests over the past five years. These requests covered a wide range of services such as communication line connectivity, installation of additional lines and equipment, radio requirements and services, network designs, etc.

Since its inception in 1988, the HAWAIIAN has been expanded to become the Hawaii State Government's information highway, which provides multimedia telecommunications services to all State agencies for their daily operations. The HAWAIIAN handles more than 1,000,000 on-line transactions per day. More than half of these transactions relate to the public's health and safety, such as:

- Actions to process payments and related activities of public welfare.
- Unemployment insurance benefits.
- Retirees' pensions.
- Workers' compensation.
- Child support enforcement.
- Child protective services.
- Payroll.

In addition to information processing, other services provided over the HAWAIIAN include:

- Video conferencing between four locations on Oahu and the islands of Kauai, Maui, and Hawaii.
- Toll free interisland telephone services for State agencies.
- Toll free interisland public access services to government and private information providers.
- Internet access for government agencies through the ICSD to the gateway at the University of Hawaii at Manoa.
- State of Hawaii Electronic Mail (SOHEM) Network.
- Legislative, City Council, and Civil Defense video broadcast transport services.

Furthermore, the State's new telephone system was implemented and most of the State buildings were wired with high-speed communication lines. Also, the ICSD negotiated and worked with personal communication system (PCS) providers to relocate State-owned microwave equipment to other frequency bands in accordance with the Federal

Communication Commission's requirements; thus, providing equipment and facility upgrades worth approximately $4,000,000 at no cost to the State. This cooperative endeavor allowed the PCS providers to establish business units and begin initial operations in an earlier timeframe, promoted competition in the offering of digital cellular services, and increased the economic base in Hawaii.

Computer Application Services

The ICSD provides application services to support State agencies in their implementation and use of Information Technologies (IT).

The ICSD provides application system design, development, and support services; technical support services for software used by professional data processing staffs; technical support services for software and access technologies used by IT users; coordination and management of standard softwares; and conducts assessments and planning for emerging technologies.

The ICSD also provides guidance, support, and assistance on PC hardware, software, and office automation.

Public Access

In 1991, the ICSD rolled out its service to provide Hawaii's citizens with an electronic means to access government information. This service was called Hawaii FYI. It set the ground work for Hawaii to participate in the federal government's promotion and participation in the use of the Internet as an information super highway and the eventual offering of Internet services by the ICSD.

Internet

The Internet is a valuable tool that State agencies can use to carry out their programs. The Internet allows citizens and businesses to access information and receive goods and services in ways that are better, cheaper, and faster. As a service to State departments and agencies, the ICSD provides the following services to assist agencies in using the Internet:

Internet Orientation and Training	Internet 101
	HyperText Mark-up Language
Internet Publication Services	Use of State Government's Internet Home Page
	Use of the State's Web Server
Internet Access Services	On-line Connections to the Internet via the State's Router Network

A detailed description of the ICSD's Internet Services is provided in Appendix 7.

In September 1995, the State's Internet World Wide Web Server with the Hawaii State Government's Home Page was unveiled. The design and development of the Hawaii State Government Home Page was a collaborated effort of the Department of Business, Economic Development and Tourism, the Department of Transportation, and the ICSD. The home page serves as the main point of reference to access the home pages of all State agencies, and is cross referenced by topics to access information within the agencies' home pages. The web address for the State government home page is:

http://www.state.hi.us

The ICSD operates and maintains an Internet web server to house the Hawaii State Government's Home Page. The web server is utilized by State agencies who do not have

the funds or expertise to operate and maintain their own web servers. This service reduced the cost of operating and maintaining redundant web servers in State government.

The ICSD operates and maintains the State government's domain name system (DNS). The Hawaii State Government's domain name is "state.hi.us." The ICSD works with agencies to create appropriate names for agencies' interconnect protocol addresses and adds them to the DNS.

The Hawaii State Government's Home Page was unveiled in September 1995. One indicator of the success of a home page is represented by the number of accesses on the home page. A summary of the accesses on the State's home page is provided in Figure 1.

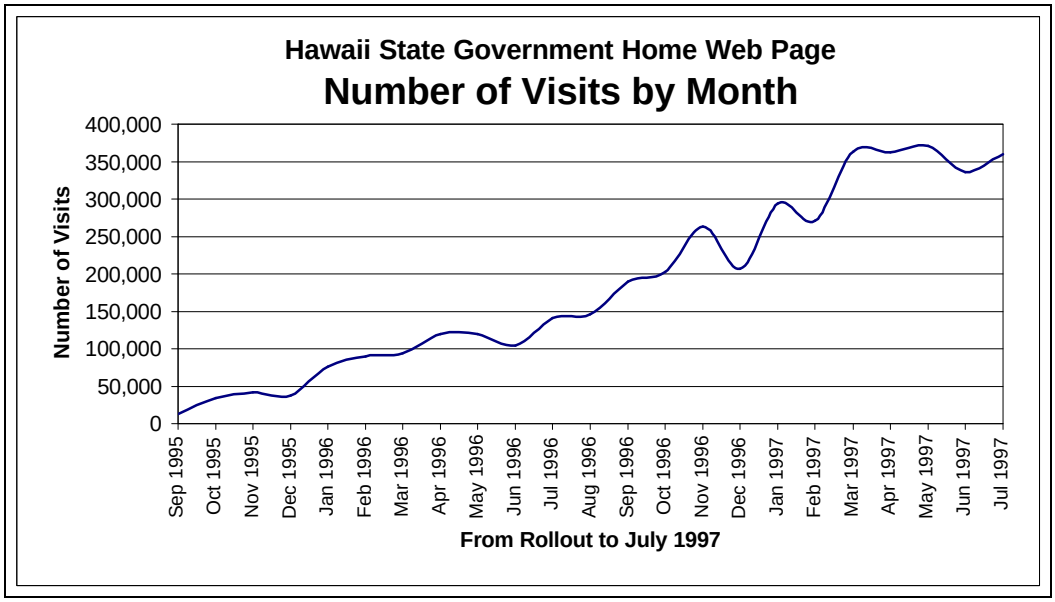


Figure 1: Number of Accesses or Visits to Hawaii State Government Home Web Page

The ICSD has assisted various agencies in developing and maintaining the web applications listed in Table 1.

Table 1: Web Applications Developed With ICSD for Hawaii FYI and the Internet

Web Application	Description
Statewide Bid Notices System	In January 1996, the Governor announced the launching of the State Bid Notice Pilot Project on Hawaii FYI and the Internet. This was a collaborative project of the State Procurement Office and the ICSD. Notices from State departments soliciting bids and proposals for goods and services are posted for computer access locally and globally. Currently, a pilot project is underway to enhance the system by allowing access to the actual IFB/RFP documents.
Statewide Price List	In 1996, the ICSD worked with the State Procurement Office to make available statewide price lists.
Tax Forms and Information	In October 1995, the ICSD assisted the Department of Taxation in putting up tax information and forms.
State of Hawaii Data Book	In December 1996, the ICSD assisted the Department of Business, Economic Development and Tourism to publish the State of Hawaii Data Book.
Department of Transportation	In December 1995, the ICSD assisted the Department of Transportation to publish their "Guide to Permits."

The ICSD's web server also houses various State agencies' home pages, which are listed in Table 2.

Table 2: Agencies With Home Pages on ICSD's Web Server

State Agency	Home Pages on ICSD's Server
Child Support Enforcement Agency	Child Support Enforcement Services Opening a Child Support Case Frequently Asked Questions Legislative updates, announcements and more!
Department of Business, Economic Development and Tourism	Starting a Business in Hawaii Tourism Filming in Hawaii Hawaii's Products and Services Statistics and Publications International Trade Assistance
Department of Commerce and Consumer Affairs	Hawaii Real Estate Commission
Department of Health	Department of Health Organization DOH Press Releases Communicable Disease Information Health and Vital Statistics Community Health Services Environmental Information Health Promotion Information
Department of Land and Natural Resources	State Parks
Department of Taxation	Tax Forms Tax Information Releases (TIR) and Announcements Hawaii Taxpayers Bill of Rights
Housing Finance and Development Corporation	General Housing Information Housing Programs
Legislative Reference Bureau	Hawaii Directory of State, County, and Federal Officials Guide to Government in Hawaii
Office of Elections	Voter Registration Candidates Election Night Preliminary Results Campaign Spending Commission
Office of the Lieutenant Governor	Official Duties of the Lieutenant Governor of Hawaii About Lt. Governor Hirono Some other projects and functions of Lt. Governor Hirono: Chair Governor's Advisory Council on Airline Relations. Chair Task Force on Science and Technology. Chair Governor's Workers' Compensation Task Force.
State Procurement Office	Bid Notices A Vendor Guide - Doing Business With the State of Hawaii Statewide Price Lists Administrative Rules
The Judiciary	Hawaii State Courts at a Glance - Historical Perspective Supreme Court Intermediate Court of Appeals Circuit Courts Family Courts District Courts Small Claims Jury Service Temporary Restraining Orders Traffic Violations

Hawaii FYI

The Hawaii FYI is an interactive network and on-line information service established by Act 1 of the 1988 Special Session of the Legislature and introduced to the public in June 1991. It is a communication and computer network that automatically "switches" users to different computers that are set up to provide information services. The ICSD played a major role in guiding, designing, developing, and implementing the Hawaii FYI Public Access electronic gateway to increase the shareability and accessibility of information, prevent the creation of redundant data, and facilitate the dissemination of data.

The Hawaii FYI provides 117 modems for the island of Oahu, 43 for each of the neighbor islands of Maui, Kauai, and Hawaii; and ten 1-800 numbers for the residents of Molokai and Lanai.

At one time, the Hawaii FYI provided access to more than 120 information services. The numbers of services have dropped due to the application and transition to Internet services and World Wide Web standards. Current information services provided on Hawaii FYI are listed below. *Italic entries* indicate a service that is an Internet web service accessible through Hawaii FYI.

1. Legislative Access Service
2. *Assistance Center Information*
3. *Agriculture Animal Quarantine Service*
4. *Bid Notices*
5. Business Registration
6. *Campaign Spending*
7. C & C Job Info
8. Career Kokua
9. Career Kokua Info
10. *DBED Information*
11. *DBED Annual Report*
12. *Consumer Dial*
13. *DLIR Information*
14. *Election Service*
15. *Felix Implementation Plan*
16. Hawaii FYI
17. County of Hawaii Police Dept. General Orders
18. *News From the Governor 1993*
19. *News From the Governor*
20. *Housing Finance and Development Corp.*
21. Hawaii State Public Library System
22. *Hunter Education*
23. TBBS Server Update (for office use)
24. ITV Program
25. DOE Kalama Internet server
26. DOE Kauila Internet server
27. KHET, Public Television
28. *Landlord/Tenant Handbook*
29. DLNR's Land Court Automated Title System
30. DLNR's LCATS service for free use
31. *Legislative Reference Bureau Directory*
32. DOE Makani Internet server
33. OIP Opinion Letters
34. *Public Access Gateway (State Home Page)*
35. School Library Service
36. *School Community Based Management Bulletin Board*
37. *SCBM News*
38. *State Parks Information*
39. *Tax Information Service*
40. Univ. of HI CARL system
41. Univ. of HI Internet server
42. *Waste Management*

Since Hawaii FYI's public introduction in 1991, information technology and networking have dramatically changed the types of communications and information access for people around the world. The World Wide Web and the HyperText Markup Language (HTML) have become defacto standards in the on-line world. The Hawaii FYI has incorporated these standards to become a more open system that facilitates information delivery and reaches a larger number of users.

In June 1996, the Hawaii FYI communication protocol was changed from X.25 to the more popular and emerging TCP/IP technology. This change reduced the ICSD's annual hardware maintenance cost by $156,000 and software licensing costs by $396,000. This migration allowed the ICSD to connect the Hawaii FYI to the State's Internet Home Page which provides the citizens of Hawaii with text-only Internet access. Many Hawaii FYI services were or will be migrated to the new Internet server. All future government information services for Hawaii FYI will be implemented on the new Internet server.

Geographic Information System (GIS)

Pursuant to House Resolution 275, H.D. Fourteenth Legislature, 1987, the Office of State Planning formed and chaired an Ad Hoc State GIS Task Force. The Office of State Planning is now called the Office of Planning (OP). The GIS Task Force recommended that Hawaii State Government begin implementation of a Statewide GIS. The OP and the ICSD initiated the implementation of the infrastructure for a Statewide GIS to provide shareability and accessibility to information among various agencies and organizations, and to minimize data redundancy. The Statewide GIS has become a major tool to improve and streamline State planning and decision-making processes.

The ICSD operates and maintains the Statewide GIS central file server hardware, software, and the GIS Laboratory. The GIS Laboratory permits users to share expensive equipment such as the workstations, digitizers, electrostatic color plotter, and color printer, as well as expertise between users. The ICSD and the OP worked closely together to coordinate the efforts of the Statewide GIS program. A GIS User Group was established in 1992 and still meets on a regular basis to keep the GIS user agencies informed as to the status of the Statewide GIS. There are over 20 State agencies utilizing the Statewide GIS for various purposes.

The ICSD also provides technical assistance to State agencies in developing GIS applications such as the 1990 Statewide Reapportionment System for the Office of the Lieutenant Governor, and statewide election maps for the Office of Elections.

The ICSD and the OP also worked closely to coordinate the data development efforts and to improve the quality of spatial databases through the development of GIS standards for data and software consistency and compatibility. Over 60 GIS data layers reside on the central GIS file server for use by State agencies such as:

- Census Boundaries
- Political Districts
- USGS Digital Line Graph
- USGS Digital Elevation Models
- USGS Digital Raster Graphics
- Land Ownership
- Land Use District Boundaries
- Tax Map Key Parcel Boundaries
- Rare and Endangered Species
- Aquifers
- Bathymetry
- Wetland Inventory
- Vegetation
- Trails
- State Parks

Electronic Mail

The ICSD began implementation of the State of Hawaii Electronic Mail (SOHEM) Network in 1985. Presently, numerous proprietary departmental electronic mail (e-mail) systems (including IBM DISOSS, Wang VS OFFICE, Lotus cc:Mail, Lotus Notes) have been connected to Lotus SoftSwitch Central which serves as the hub of the SOHEM Network. In order to maximize the usefulness of this system, a central statewide directory with query capabilities and links to the departmental systems has been implemented.

As of June 30, 1997, 16 departments are connected to SOHEM:

- Accounting and General Services
- Attorney General
- Business, Economic Development & Tourism
- Hawaiian Home Lands
- Human Resources Development
- Labor and Industrial Relations
- Agriculture
- Budget and Finance
- Commerce and Consumer Affairs
- Health
- Human Services
- Land and Natural Resources

- Lieutenant Governor's Office
- Taxation
- Public Safety
- Transportation

The ICSD also provides first-level and second-level support for selected e-mail systems. First-level support includes daily administration and problem determination and resolution assistance to e-mail clients. Second-level support includes guidance and consultative support to departmental e-mail administrators.

Furthermore, the ICSD provides first-level support for the SOHEM network by addressing delivery among e-mail systems and statewide directory entry problems.

Distributed Computer Systems and Local Area Networks

Distributed information processing is the networking of computers where the processing of information is initiated on local computers, and the resultant data is sent to a central computer for further processing with the data from other local systems. Distributed processing is often a more efficient use of computer processing power since each CPU can be devoted to a certain task. A local area network (LAN) is the perfect example of distributed processing.

The next step in the distributed processing environment is enabling LAN to LAN connectivity within departments and eventually among State departments. The ICSD has implemented a TCP/IP based router network to facilitate the interconnectivity and interoperability of LANs within the State. Appendix 5 contains a diagram of the State's router network.

The ICSD also provides first-level and second-level support for local area networks. First-level support includes daily administration and problem determination/resolution assistance for ICSD LAN clients. Second-level support includes guidance and consultative support to departmental LAN administrators.

Since October 1, 1994, the ICSD has provided consulting and direct support services to agencies in the planning, design, installation, implementation, and problem resolution of LANs. The ICSD has worked on more than 24 LAN projects and services. Some of the departments and agencies that the ICSD has serviced include:

- Office of the Governor
- Office of the Lt. Governor
- Accounting and General Services
- Agriculture
- Attorney General
- Budget and Finance
- Commerce and Consumer Affairs
- Business, Economic Development, and Tourism

The ICSD's assistance has reduced or eliminated departmental expenditures for consultants and installers. The ICSD has helped these agencies expand, relocate, reconfigure, and troubleshoot their networks. The ICSD also provided direct LAN administration support services when the agencies had no LAN administrators.

Computer Application Systems

The ICSD has established AGS Management System's Systems Development Methodology (SDM)/Structured as the State's standard methodology to be followed for any application development project. A standard development methodology, when properly used, facilitates the development of application systems which are of high quality, meets users' requirements, and are easy to maintain.

The ICSD is investigating other technologies to improve the application development process. It is currently piloting software products such as Oracle, KnowledgeWare, and

Powerbuilder as a means of developing and maintaining quality applications faster and easier.

The ICSD acquired other productivity tools to improve the efficiency of the State's information processing professionals. Several are described in Table 3.

Table 3: Programming Productivity Tools

Tool Names	**What Does It Do**
DCD III	Documents computer programs and accelerates design, development, debugging, and maintenance efforts.
Job Scan	Analyzes job control language statements for correctness to ensure successful execution.
Speed II PACE Natural	These high-level programming languages accelerate the development and maintenance of application systems.
CA-Optimizer	Reduces the size of a computer program and improves its execution time. It also decreases the time required to locate programming errors.

The ICSD has developed application systems which automate a department's mission critical functions. These applications are described in Table 4.

Once a system is developed, it must be maintained and enhanced to accommodate changes in federal and State statutes, rules, and regulations; new user requirements; and the need to utilize and implement new technology, e.g., faster, larger capacity disk drives. During the last six years, the ICSD has received over 2,900 requests for these application services. The workloads from these requests are beyond the availability of current resources.

The ICSD provides this type of maintenance and enhancement support for 93 application systems for 14 State departments and agencies. These 93 applications have over 8,300 programs that use over 3,000 files. There are 10 files with over 1,000,000 records. The largest file has over 6,000,000 records. Within this group are applications that are essential for public health, safety, and the economy. For essential applications, the ICSD's staff may be called any hour, 24 hours a day, seven days a week, to ensure that these applications are available when needed. The essential applications maintained by the ICSD are described in Table 5.

The ICSD has and continues to provide new system development, enhancement, and maintenance services to the departments in the Executive Branch. The total numbers of requests received and completed during the past six fiscal years are summarized in Figure 2 below.

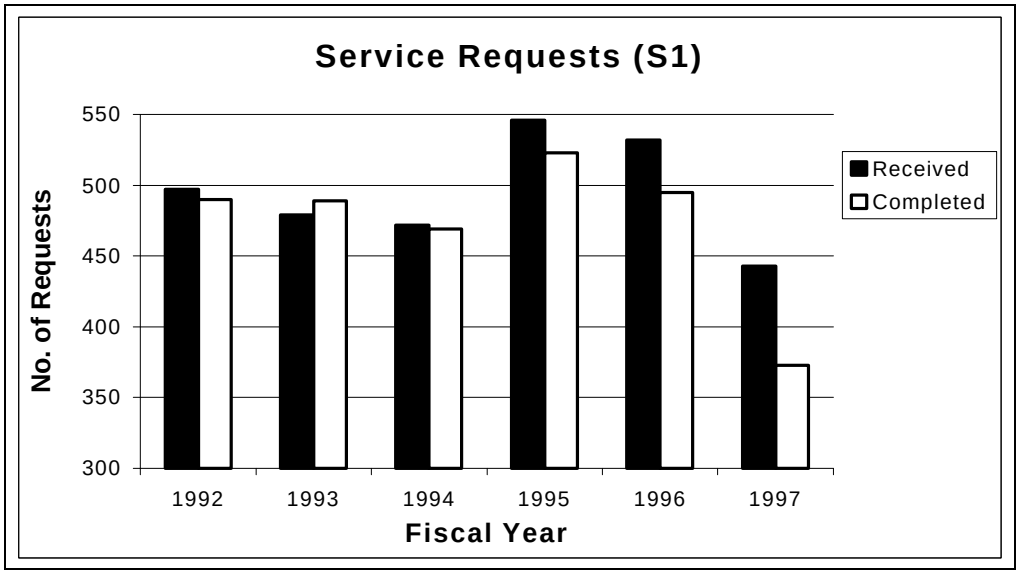


Figure 2: Requests for Services

Figure 2 also illustrates the effects of diminishing ICSD staff resources. In fiscal years 1995 and 1996, there was an increase in service requests received as departments tried to computerize more of their operations and functions to compensate for shrinking budgets and fewer staff. In fiscal year 1996, after the reduction in force (RIF), service requests had to be limited to those that were mission critical for the departments, mandated by the State and/or federal government, or required for public health and safety. In fiscal year 1997, the gap between service requests received and completed grew.

The ICSD also undertakes "**special**" projects. These projects usually require staff from several branches of the ICSD to form a cohesive team whose combined technical expertise is needed to meet the requirements of the project. For example, the ICSD has had overall responsibility of the ballot counting phase of the Statewide Election Project since 1974. Tasks performed by the ICSD include determining hardware and software requirements, coding and testing the ballot counting programs and system, determining and supporting telecommunication requirements, and processing of the election ballots.

The Year 2000 Compliance Project was created to address the special problems associated with the turn of the century. This event will affect many of the applications maintained by the ICSD. The project entails the identification of affected applications and making sure they continue to operate correctly beyond the year 2000. Preliminary analysis indicates that over 40 application systems maintained by the ICSD are affected and over 33,000 hours will be needed to complete the modifications.

Furthermore, the infrastructure and central support services provided by the ICSD are crucial to the development and implementation of new large, complex, statewide systems such as payroll, human resources (personnel), employees' retirement, financial accounting, health fund, and fixed assets. These new statewide systems must be well coordinated, interconnected, and interoperable if they are to be effective and efficient, and universally available to State agencies in all locations.

Table 4: Mission Critical Applications Developed by ICSD

APPLICATION SYSTEM	DESCRIPTION	HIGHLIGHTS	TECHNICAL STATS
On-line Form 5 Information System	The interactive On-Line Form 5 Information System (OFIS) records and maintains all personnel actions that occur for employees in the Executive Branch of State government. Approximately 6,000 actions are processed on a monthly basis. This information is used by the Department of Human Resources Development (DHRD) to monitor personnel actions and to verify compliance with the State's policies and procedures and personnel rules and regulations. Output generated by the system includes reports which are used by both DHRD and State departments to assist them in their decision making; files which are distributed to the various departments, agencies, and organizations; and inquiries which are used by the Pre-Audit Branch of the Department of Accounting and General Services to verify employee pay rates (since the Form 5 is the authorizing document for an employee's pay rate). Employee pay raises and retroactive pay raise actions are also generated by OFIS.	Approximately 6,000 actions processed per month. Records and maintains all personnel actions that occur for employees in the Executive Branch of State government. Used by the State to monitor personnel actions and to verify compliance with the State's policies, procedures, personnel rules, and regulations.	No. of Programs: 1,145 No. of Files: 205 No. of Records in Largest file: 126,493 No. of transactions Per Year: 75,025
Management Information System for Training (MIST)	The Management Information System For Training (MIST) was developed for the Training and Safety Division, Department of Human Resources Development (DHRD). This interactive on-line system allows DHRD to be in a position to better provide for the educational and training needs of employees within the Executive Branch of State government.	Allows agencies to register their employees for classes on-line, maintains a repository of employee training records, keeps track of employees who need to take certificated courses periodically, monitors requests for unoffered courses, and tracks attendance and payments made by agencies. These features allow the State to better meet the educational and training needs of its employees.	No. of Programs: 113 No. of Files: 33 No. of Records in Largest file: 34,417 No. of Employees Registered: 9,500 for calendar year 1996
Applicant Information System	The on-line, interactive Applicant Information System (AIS) enables the Department of Human Resources Development, Recruitment and Examination Division, to efficiently manage and process applications for vacant civil service positions within the Executive Branch of State government.	Computerized tracking of applications for State jobs. Features of the system include generating accept/reject notices, scheduling examinations, scoring examinations, generating lists of eligible applicants, tracking declinations, certifying eligible applicants, and creating certificate of eligibles.	No. of Programs: 134 No. of Files: 62 No. of Records in Largest file: 188,255 No. of Applications Processed Per Year: 24,000

APPLICATION SYSTEM	DESCRIPTION	HIGHLIGHTS	TECHNICAL STATS
State Cash Management Improvement System	The primary function of the State Cash Management Improvement System is to enable the State to meet the requirements of the Cash, Management Improvement Act which became a Federal Law on October 24, 1990. Beginning with the State's 1994 fiscal year, the legislation requires the State to perform timely draws of Federal funds or pay the U.S. Department of Treasury interest for any Federal funds received prematurely. Conversely, the State will be entitled to interest from the Federal government for the amounts advanced by the State, with valid authority. This system utilizes data from existing accounting systems to capture the receipts and disbursements of Federal funds, and thus determine the amount of interest payable to or receivable from the Federal government.	Computes interest due or owed on Federal funds received for the State's major Federal assistance programs. Tracks approximately 15 federally funded programs administered by six different departments/ agencies. Includes the Medical Assistance Program and the Highways Planning and Construction Program, both of which receive over $200,000,000 in Federal aid. In total, over $700,000,000 in Federal funds are processed. This system enables the State to be in compliance with Federal regulations; non-compliance may result in the Federal government prescribing the fund transfer procedure and the method for calculating interest liabilities.	No. of Programs: 62 No. of Files: 74 No. of Records in Largest file: 850,000 No. of Transactions Per Year: 1,050,000
Professional and Vocational Licensing System	The Applicant/Licensee Integrated Automated System (ALIAS) was developed for the Professional and Vocational Licensing Division of the Department of Commerce and Consumer Affairs. The system has the capability to track individuals or businesses from the time they submit an application for a license, through the various review phases including exam scheduling and exam results posting, to final issuance of that license. Once licensed, ALIAS helps ensure that the licensee complies with all regulations associated with the maintenance of that license. The ALIAS provides on-line inquiry and update capabilities and has the ability to answer ad hoc queries on the database. ALIAS' on-line inquiry capability allows the staff to answer inquiries from the public regarding licensees in a timely manner. This service is a key component in ensuring consumer protection. The system resides on the Wang minicomputer located at the central computing center and uses Wang's relational database product PACE. It also incorporates print jobs that run on the IBM system and makes extensive use of the Xerox laser printer. An interesting feature of ALIAS is its use of bar coding technology on its license renewal forms.	Monitors over 100,000 licensees of various trades and professions. Helps enforce the many and varied licensing requirements of over 40 different boards, commissions, and programs such as the Real Estate Commission, the Board of Dental Examiners, and the Contractors' Board. Enables other agencies who have on-line inquiry access to perform their duties and functions in a more effective and efficient manner. For example, the Department of Taxation; the Department of the Attorney General, Child Support Enforcement Agency; and the Department of Commerce and Consumer Affairs, Regulated Industries Complaints Office, have inquiry access to assist them in their investigations.	No. of Programs: 432 No. of Files: 61 No. of Records in Largest file: 686,000 No. of Transactions Per Year: 550,000
General Obligation (G.O.) Bond Allocation Tracking System	The Bond Proceeds Tracking System was developed to comply with the Tax Reform Act of 1986 (TRA), which introduced changes in the issuing of bonds that are exempt from Federal taxation to bond buyers. The TRA includes reductions in the amount of bond proceeds to	Monitors cash received from the sale of tax-exempt G.O. bonds, which will account for approximately $1 billion in State revenues for the current biennium.	No. of Programs: 32 No. of Files: 36 No. of Records in Largest file: 20,000

APPLICATION SYSTEM	DESCRIPTION	HIGHLIGHTS	TECHNICAL STATS
	be used for Private Activity purposes, new restrictions over qualified bonds, restrictions on the interest earned on the bond proceeds in accordance with arbitrage requirements, and increased recordkeeping and reporting on all bond issues. This system also satisfies the funding requirements of the bond fund project pursuant to Chapter 39 of the Hawaii Revised Statutes. The Financial Administration Division of the Department of Budget and Finance is the owner of this system. This system utilizes a first-in, first-out (FIFO) basis and tracks all bond fund proceeds which are appropriated and allocated to Capital Improvement Projects while ensuring that none of the TRA provisions are violated. The employment of the FIFO method depletes the cash for each bond series at a faster rate, thereby reducing the amount of investment earnings that may be rebated to the U.S. Treasury pursuant to the arbitrage requirements of the 1986 TRA. This system also verifies that total expended amounts for each project are consistent with what is recorded on the Bond Master file maintained by the Department of Accounting and General Services. Since the sale of G.O. Bonds is a significant source of funds for the State, the day-to-day maintenance and ongoing enhancements of this system are very important.	Information is used to keep the State in compliance with the Tax Reform Act of 1986 and Chapter 39 of the Hawaii Revised Statutes. Failure to comply could cause the U.S. Department of Treasury/ Internal Revenue Service to declare a bond issue taxable. This will severely hinder the State's ability to sell tax-exempt bonds.	No. of Transactions Per Year: 24,000
Central Warrant Writer System	The Central Warrant Writer System is a daily production batch system developed for the Department of Accounting and General Services. It generates checks for the Financial Accounting Management Information System's vendor payments, Hawaii Housing Authority rent supplements, Department of Defense uniform allowances, Hawaii Public Employees' Health Fund medicare refunds, jury payroll, U.S. savings bond refunds, election payroll, and tax refunds.	Generates over 4,000,000 payments (e.g., tax refunds, vendor checks, etc.) per year.	No. of Programs: 48 No. of Files: 50 No. of Records in Largest file: varies No. of Transactions Per Year: 1,000,000
Statewide Payroll System	The Statewide Payroll System is a daily production batch system (with limited on-line capabilities to do inquiries and edit/validation corrections). The system records and maintains payroll information for all State government employees. It pays employees of the State of Hawaii including the Executive Branch of government, Department of Education (certificated personnel), University of Hawaii Board of Regents, Office of	Generates approximately 65,000 checks each pay period. Records and maintains payroll information for employees from the Executive Branch of government, Department of Education (certificated personnel), University of Hawaii Board of Regents, Office of Hawaiian Affairs, Judiciary, and the Legislature (employees	No. of Programs: 447 No. of Files: 220 No. of Records in Largest file: 1,360,314 No. of Transactions Per Year: 2,934,100

APPLICATION SYSTEM	DESCRIPTION	HIGHLIGHTS	TECHNICAL STATS
	Hawaiian Affairs, Judiciary, and the Legislature (employees other than session workers). Documents generated during this process includes checks (approximately 65,000), registers, vouchers, inquiries, and a host of other payroll-related documents, reports, and files which are distributed to various State departments and agencies, to assignees and agents, and to the Comptroller's accounting staff. Due to its critical nature, Payroll project members are placed on a 24-hour call back status.	other than session workers).	
Comprehensive Employees' Retirement System	The Comprehensive Employees' Retirement System has been designed to be an integrated, fully automated computer system with on-line inquiry and update capabilities. The system has integrated and automated a majority of the accounting, annuity savings, benefit computation, pension payroll, and investment functions of the Employees' Retirement System (ERS). The system obtains information from the State and County Payroll and Personnel systems, the Health Fund, ERS' Bank Custodian's systems, and the computer systems of financial institutions.	Over 20,000 retirees receive semi-monthly checks. Computerized tracking of annuity savings/payroll information for over 50,000 active employees in the Executive, Judiciary, and Legislature branches of government. Computerized calculating of retirement benefits. Automated accounting of daily transactions for the multi-billion dollar ERS; on-line inquiry and update capabilities of the various ERS files; automatic update of ERS systems via machine readable files transferred from other systems; more accurate actuarial data and payments; and timely response to members' requests for service credit data and retirement estimates.	No. of Programs: 2,333 No. of Files: 453 No. of Records in Largest file: 3,200,000
Warrant Reconciliation System	This daily production batch system captures information on checks issued by the Central Warrant Writer, Welfare, Unemployment Benefits, and State Payroll check producing systems. It reconciles the checks cashed at the banks to ensure that the cashed amount generated by the financial institution matches that of the State. This system also tracks checks issued by the State. Due to its critical nature, Warrant Reconciliation project members are placed on a 24-hour call back status.	Reconciles over 2,000,000 checks per year. Has query capability to check status of payment (e.g., outstanding, cashed, stop pay, etc.)	No. of Programs: 50 No. of Files: 51 No. of Records in Largest file: 300,000 No. of Transactions Per Year: 5,000,000

Table 5: Additional Essential Applications Maintained by ICSD

APPLICATION SYSTEM	DESCRIPTION	HIGHLIGHTS	TECHNICAL STAT
Unemployment Insurance Tax System	The Unemployment Insurance (UI) Tax System is primarily a batch update system with on-line data entry/validation and inquiry capabilities. The system maintains the UI employer database, tracks the accounting and collection of UI taxes, penalizes delinquent employers, and maintains statistics for Federal and State reports. The system consists of four subsystems: Account Maintenance, Accounting, Delinquency, and MIS (Management Information System). The Account Maintenance subsystem maintains the demographic information for employers who are subject to the UI tax. The Accounting subsystem tracks all monetary transactions that occur for an employer. The Delinquency subsystem keeps track of all delinquent employers by sending reminders, notifications, etc., and assessing penalties and interest. The MIS subsystem creates management reports and all the Federal reports that are required by law.	Improves account maintenance, accounting, delinquency, and MIS processes to provide better service to the State and the subject employers.	No. of Programs: 179 No. of Files: 189 No. of Records in Largest file: 1,100,000 No. of Transactions Per Year: 150,000
Unemployment Insurance Benefits System	The Unemployment Insurance (UI) Benefits System is a fully integrated system featuring extensive on-line update and inquiry facilities. This system automates most of the tasks involved in keeping track of UI Benefit claims. The system is designed to allow complex on-line inquiries as well as the editing and validation of data before updating files. All these activities can be done simultaneously by many users, thus providing the most up-to-date information. The system also has batch jobs that perform functions such as the printing of unemployment checks, the generation of reports, and file updates. The UI Benefits system consists of nine subsystems. The subsystems are appeals, weeks claimed, initial claims, employment, general, master index, non-monetary, overpayment, and statistics. The appeals subsystem maintains and tracks all issues and overpayments under appeal. The weeks claimed subsystem does all the processing that will create a payment and generate a warrant for a claimant. The initial claims subsystem maintains all data entered when an unemployment claim is filed. The employment subsystem maintains all information for a claimant's	Provides on-line security to restrict access to files and data to authorized personnel; system reports to balance the transactions to the files; data entry at forms point of entry; and on-line real-time update of master files. Creates user friendly on-line data entry and inquiry screens and computer generated notices/forms to reduce the need for special pre-printed forms. Generates reports through remote printers at local offices.	No. of Programs: 875 No. of Files: 275 No. of Records in Largest file: 3,612,399 No. of Transactions Per Year: 15,660,000

APPLICATION SYSTEM	DESCRIPTION	HIGHLIGHTS	TECHNICAL STAT
	employment history. The general subsystem maintains tables that are used by the entire system. The master index subsystem maintains employer information. The non-monetary subsystem maintains and tracks all issues relating to a benefit claim. The overpayment subsystem is used to control potential overpayment weeks detected in the weeks claimed subsystem. The statistics subsystem provides statistical reports for various offices within the Department of Labor and Industrial Relations.		
Unemployment Insurance Quarterly Wage Reporting System	The Quarterly Wage Reporting System is primarily a system for the capture and maintenance of employee quarterly wage data for use and distribution by the Unemployment Insurance (UI) Benefit and UI Tax systems. Other functions include the controlled distribution to other qualifying agencies, penalizing non-compliant employers, and providing summary data for statistical evaluations. This system is primarily an on-line oriented system with batch processing for functions which require large system resources such as mass updates to the database, extensive searches, and large-scale report generation.	Provides an accurate and centralized source of employer and employee wage information for use by other UI systems.	No. of Programs: 203 No. of Files: 96 No. of Records in Largest file: 5,680,000 No. of Transactions Per Year: 5,200,000
Unemployment Insurance State Employment and Training Assessment System	The Employment and Training Tax System is a State system which is linked to the Federal Unemployment Insurance Tax System for the collection of a tax assessment based on the Federal Experience Rates for the subject employers. This system is for the Unemployment Insurance Division, Department of Labor and Industrial Relations. This system was enacted by the 1991 Legislative Session.	The Employment and Training fund provides funding for a comprehensive and coordinated job training system to help meet the employers' demands for a skilled work force.	No. of Programs: 113 No. of Files: 37 No. of Records in Largest file: 285,000 No. of Transactions Per Year: 120,000
Financial Accounting Management Information System	The on-line statewide Financial Accounting Management Information System (FAMIS) is a comprehensive and flexible accounting system that was designed to meet the accounting and reporting requirements of the Department of Accounting and General Services as well as the financial requirements of the States' other operational agencies. Approximately 1,000 payments per day are inputted into FAMIS. These payments must be processed in a timely manner to reduce the possibility of the State incurring additional interest charges and/or missed discounts.	Provides State departments with up-to-date cash balances by fund. Ensure payments to vendors are made in a timely manner so that the State can take advantage of discounts and reduce the possibility of incurring interest charges.	No. of Programs: 310 No. of Files: 310 No. of Records in Largest file: 795,000 No. of Transactions Per Year: 540,000

APPLICATION SYSTEM	DESCRIPTION	HIGHLIGHTS	TECHNICAL STAT
	Due to its critical nature, project members are placed on a 24-hour call back status.		
Comprehensive Net Income Tax System	The Comprehensive Net Income Tax System was designed to replace the manual and automated processes used to bill and collect net income tax liabilities, refund taxpayer overpayments, monitor the accuracy and timeliness of taxpayer tax filings, and report statistics relative to these processes. Each year, the system processes over 500,000 tax returns with over $324,000,000 of tax remittances received by the State and over $32,000,000 of tax refunds issued to taxpayers. Due to its critical nature, project members are placed on a 24-hour call back status.	Provides immediate recordation and processing of net income tax documents to facilitate the timely deposit of receipts and refund of overpayments to the taxpayers. Provides accurate and timely financial/management reports; automates the audit of net income tax returns; provides automated interface to other systems to report non-filers; and automates letters to taxpayers regarding discrepancies, lack of information, and/or adjustments.	No. of Programs: 348 No. of Files: 325 No. of Records in Largest file: 2,000,000 No. of Transactions Per Year: 950,000

Computer and Network Operations

The purpose of computer and network operations services is to provide reliable, effective, and efficient centralized computing services to State agencies and other government units. The ICSD provides computer and network operations support services, problem, and change resolution in support of current mainframe and minicomputer software products, centralized security administration, and evaluates and installs new software and hardware products.

The ICSD computer center operates seven host computer systems continuously—seven days a week, 24 hours a day, including holidays. In addition, the ICSD is continually seeking innovative means to make the State's mainframe and minicomputer configurations more compatible and compliant with the growing IT processing needs of State agencies. Table 6 describes the host computers operated and supported by the ICSD.

Table 6: Host Computers

Host Computer Systems	Key Highlights
2 IBM mainframe computers	Hard disk storage: 560,000,000,000 characters Networked Devices: 15,000 terminals and PCs Transactions per month: 12,000,000 Database requests per month: 1,000,000,000
4 Wang VS Minicomputers 1 Hewlett-Packard minicomputer	Hard disk storage: 60,000,000,000 characters Networked Devices: 1,000 terminals and PCs

The host computers support databases accessed by the following departments and agencies:

- Accounting and General Services
- Agriculture
- Attorney General
- Budget and Finance
- Business, Economic Development, and Tourism
- Commerce and Consumer Affairs
- Defense
- Education
- Health
- Human Resource Development
- Human Services
- Labor and Industrial Relations
- Land and Natural Resources
- Legislative Reference Bureau
- Library Services
- Lieutenant Governor's Office
- Office of Hawaiian Affairs
- Ombudsman
- Public Safety Division
- Taxation
- Transportation
- University of Hawaii

In addition to operating and supporting the host computers, the ICSD computer center has an Assistance Center which monitors and resolves connectivity problems on HAWAIIAN and the host telecommunications network. The host telecommunications network is comprised of the following components:

- Harris/Farrinon Microwave Radio
- Fujitsu Multiplexors (DMIX)
- Fujitsu Synchronous Optical NETwork (SONET)
- Timeplex Remote Line Concentrators
- Timeplex Public Switched Data Network (PSDN)
- Cisco Routers

The Judiciary and the City and County of Honolulu are also connected to the host telecommunication network and the ICSD computer center.

The Assistance Center also coordinates the use of the State's video conference centers (VCC). A summary of VCC usage is provided in Figure 3 and Figure 4.

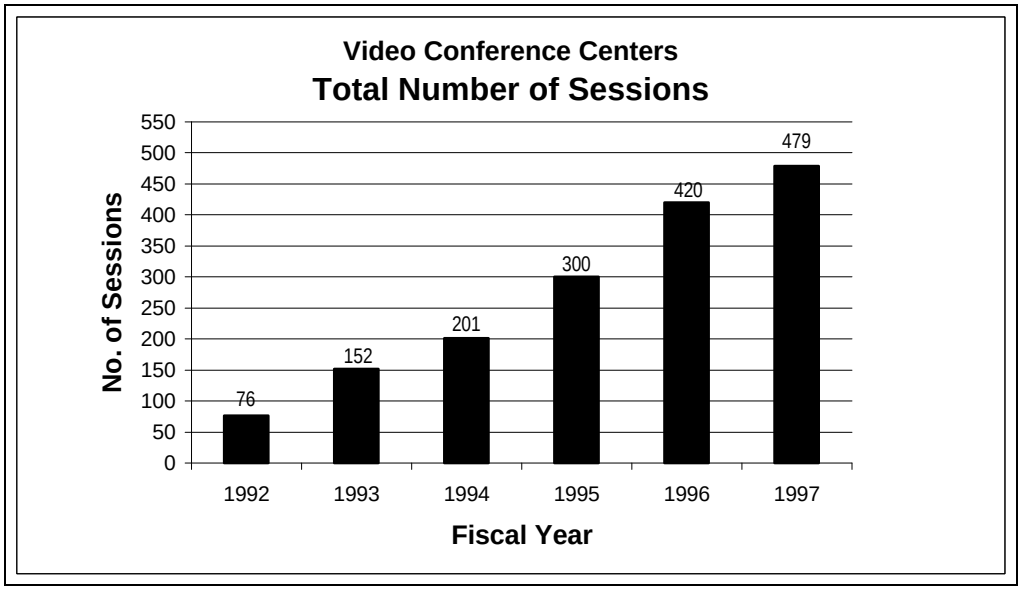


Figure 3: Total VCC Sessions

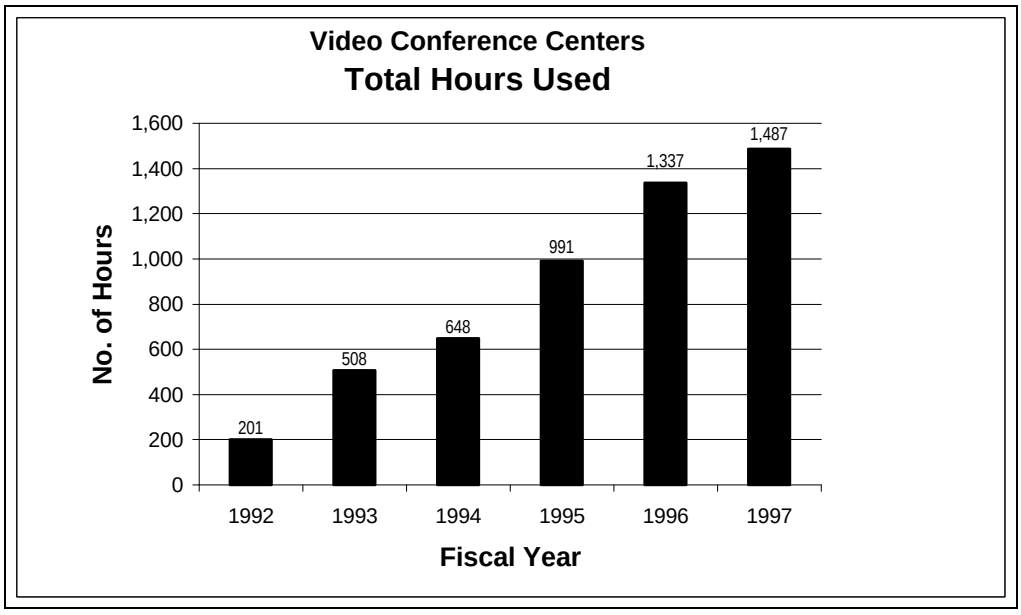


Figure 4: Total Hours VCCs Have Been Used

The ICSD computer center has completed many initiatives and refinements to improve its efficiency, its operations, reduce its operating costs, or satisfy user requirements. These are described in Table 7.

Table 7: Computer Center Initiatives and Refinements

Initiative	Description
New System Installation	Installed additional hardware and software needed to implement the FMS system for the Department of Education; the KEIKI system for the Child Support Enforcement Agency; the HAWAII FYI system on twin Unisys minicomputers①; the ASK-2000 system on an IBM AS/400②; and replaced a PRIME system with a Hewlett-Packard system for GIS support. ①*(Effective December 1996, this system was moved to another platform and the Unisys hardware and software were discontinued)* ②*(Effective November 1996, this system was moved to another platform and the AS/400 hardware and software were discontinued)*
Mainframe Hardware Upgrades	Replaced two water cooled mainframe computers with an air-cooled mainframe computer resulting in savings in machine maintenance, software licensing, and electrical and air conditioning costs.
Minicomputer Hardware Upgrades	Upgraded or installed four WANG minicomputers that provide support for the Department of Land and Natural Resources, the Department of Human Resource Development, the Department of the Attorney General, and the statewide image project.
Automated Tape Management	Replaced reel magnetic tape with cartridge magnetic tape and automated tape cartridge handling. This increased the tape handling capacity and the number of jobs that was processed per day. This also reduced magnetic tape media failures, tape media costs, filing errors, wrong tape mounts, and storage space requirements.
Distributed Systems Connections	Implemented mainframe software that provided communications with WANG, Unisys, and IBM minicomputers providing the capability for end users on the IBM communications network to access these systems.
Mainframe and Minicomputer Operating Software Upgrades	Implemented three major operating system upgrades on the ICSD's mainframe computers including major enhancements to data security software; two major operating system upgrades on WANG minicomputers including major enhancements to data security software; two major operating system upgrades on HP minicomputers; one major operating system upgrade on Unisys midrange computers; and one major operating system upgrade on IBM minicomputer.
Emergency Power for Communications	Provides users with continuous communication services to the host computer systems in the event of a power failure at the Kalanimoku Building.
Mainframe Software Services	Implemented mainframe software that provides end users the capability to access multiple mainframe based databases concurrently from one physical terminal. This permits more productive use of time by end users because they can access all mainframe databases at one time as opposed to one at a time. This project also implemented mainframe software that provides programmers and end users the ability to print reports to printers at their location.
X.25 Communication	Installed and implemented the capability for a WANG system to communicate to the HAWAII FYI system. This resulted in the creation of several text based information services on a WANG minicomputer.
Automated Job Scheduling	Replaced a manual job scheduling with an automated job scheduling system. This resulted in fewer errors in scheduling production workload and increased the accuracy and timeliness of the processing of production jobs.
Laser Printers	Migrated many applications from impact printers to laser printers. The laser printers reduced the need for pre-printed forms. Paper costs were reduced due to printing on both sides of the paper or in multiple reduced images per side of paper.

UH Connection	Implemented a peer-to-peer connection between the UH's computer center and the ICSD computer center. UH users can now access databases located at the ICSD.
Middleware	Installed mainframe software that permits the connection of the ICSD, the City and County of Honolulu, and the Judiciary computer centers' message routing services for the support of Juvenile Justice Information System.
Eliminate Computer Reports Not Used	Identified and deleted approximately seven percent of the reports generated by computerized applications. This saved the State from printing about 2,500,000 pages of reports each year.
Data Base upgrades	Implemented new versions of the ADABAS, a database management system and NATURAL, a fourth generation language; installed and upgraded the DB2 database in support of the Department of Education; upgraded WANG application generation software to provide additional capability to systems operated by the Department of Land and Natural Resources and the Department of Human Resource Development; and upgraded WANG fourth generation language software to provide additional capability to systems operated by the Department of the Attorney General and the Department of Human Resources Development.
System Security Standard	Published Information Systems Security Overview and Mainframe and Minicomputer Data Security standards. Together, they define the ICSD's data security policies, standards, and guidelines.

Information Resource Management and Administrative Services

The purpose of information resource management and administrative services is to provide the overall guidance, direction, and management of the Information Technology Program in the Executive Branch of Hawaii State Government. The ICSD works closely with the Legislature and the Judiciary to promote technology development by developing statewide strategic directions, and computing and telecommunications standards and policies.

The cornerstones of a good technology management program are:

- Meaningful continuous planning: strategic and operational.
- Accepted and adhered to administrative policies, procedures, standards, guidelines, and conventions.
- Total commitment to quality technical and management skills through a strong education and staff development program.
- Total commitment to quality customer support and service.

Management and Administrative Services

To manage the statewide Information Technology Programs, the ICSD provides the following information resource management and administrative services:

- Formulation, publication, and enforcement of information technology and telecommunication policies, procedures, standards, conventions, and guidelines in the use of technology by government programs.
- Guidance and assistance to agencies developing their master strategic and operational plan.
- Monitoring of agency's DP projects to assure successful implementation and attainment of objectives and requirements of automation.

- Education/staff development in technical and management areas (see the next section for more information).
- Procurement assistance and services to acquire technical products, consultant and other services, and supplies.
- General advisory/consultant services.

The ICSD provided the following administrative services:

Table 8: Administrative Services Provided

Service Area	Services Provided
Standards	Standards Release 1 was published December 10, l986, and was followed by releases 89-01 through 89-08, 90-01, 90-02, 90-03, 91-01, 92-01, 92-02, 92-03, 93-01, 93-02, 93-03, and 94-01.
Policies	The ICSD updated the Governor's Budget Instructions of 1996 to reflect changes in administrative procedures to budget/acquire computer and communication services, facilities, and resources.
Procurement	Before 1994, the ICSD issued price lists that were competitively bid for common computer hardware, software, and data processing supplies and services that agencies needed. The ICSD also administered and monitored these contracts.

The ICSD accepted, filed, and used departmental Distributed Information Processing and Information Resource Management (DIPIRM) plan updates as references on the hardware, software, services, and facilities identified by departments for their information processing needs. Most updates contained new or revised Project Valuation Assessments (PVA) for the projects that the department intends to complete. A PVA is an executive summary that describes the project, its scope, benefits, risks, base requirements, projected timeframe, and the costs. The ICSD has departmental DIPIRM updates on file for 11 departments. These DIPIRM updates contain more than 75 planning and PVA documents.

In September 1990, ICS Circular 90-1, Policy on Consultant Services for Computer Systems, Information Systems, and Technology Projects was issued in accordance with Section 212A, Act 299, Session Laws of Hawaii 1990. The legislative intent was that the B&F shall review the specifications in advance for all acquisitions for consultant services and request for proposals that will cost $100,000 or more. Table 9 summarizes the ICSD's assistance and participation in the procurement of consultant services.

Table 9: ICSD Participation in Specifications for Consultant Services

Department	Consulting Services Requested
FY 1990	
Attorney General Resource Coordination Division	Juvenile Justice Information System (JJIS) Redesign - Requirements and Design Alternatives Validation
Human Services Social Services	Social Services Information System (SSIS) – Contract negotiations
Human Services Social Services	Child Protective System Redevelopment Services
FY 1991	
Attorney General Resource Coordination Division	JJIS - External Specifications for System Interfaces and Internal Specifications for the core system
Attorney General Hawaii Criminal Justice Data Center	Offender-Based Transaction Statistics/Computerized Criminal History (OBTS) Enhancements
Attorney General Child Support Enforcement Agency	Child Support Enforcement Agency System (CSEA) Redesign - Advance Planning Document

Transportation Airports	Airports Operations Control System - reviewed but was not solicited because department determined this was an exempt item.
FY 1992/93	
Attorney General Child Support Enforcement Agency	Develop & Implement a New Comprehensive CSEA system (now KEIKI)
Attorney General Hawaii Criminal Justice Data Center	OBTS – Requirements Definition and Design Alternatives
Attorney General Hawaii Criminal Justice Data Center	OBTS – External Specifications and Internal Specifications
Health Behavioral Health Administration	Reviewed IFB for Medical Billing/Collection Services Consultant but no solicitation or contract
Labor UI Division	Redesign of UI Tax
Labor Employment Services	ALEXIS Implementation
Personnel (Now DHRD)	HRMS Pilot Implementation - submitted only for informal review; no action on comments; contract not submitted
University of Hawaii Accounting	Requirements Validation for the UH Financial Management System
University of Hawaii Accounting	Software Selection for the UH Financial Management System
FY 1993/94	
Attorney General Hawaii Criminal Justice Data Center	OBTS – continuation of External Specifications and Internal Specifications
Hawaiian Home Lands	Comprehensive New System Plan, Requirements Definition, and Design Alternatives; award process canceled
Human Services FASD	Hawaii Automated Welfare Information (HAWI) System Enhancements
Taxation	Voice Response Phone System
Transportation Harbors Division	Strategic IRM Plan and Requirements Definition
Attorney General Resource Coordination Division	JJIS – Telecommunications consultant RFP
Attorney General Resource Coordination Division	JJIS – Applications/Database Interface Middleware Product Evaluation and Selection
FY 1995	
Labor Employment Services	ALEXIS Public Access Network Implementation
FY 1996	
Commerce and Consumer Affairs Foreign Trade Zone	Computer System Enhancements - Technical research and assistance for planned consultant solicitation
FY 1997	
Commerce and Consumer Affairs Foreign Trade Zone	Computer System Enhancements - Consultant Services RFP
Commerce and Consumer Affairs	Voice Response System RFP
Hawaiian Home Lands	Comprehensive new system and departmental networking
Attorney General Hawaii Criminal Justice Data Center	OBTS – Technical design refinements & implementation

Skills Development and Training in Information Technologies

In order to use information technologies and its applications effectively, employees needed to be trained and updated regularly on new products and services. The ICSD trained over

11,000 employees in the Executive, the Legislature, and the Judiciary Branches of Government to use technology tools such as word processing, spreadsheets, databases, system development methodologies, programming languages and utilities, project management, electronic mail, local area networks, and video conferencing. Training was conducted using staff instructors, contracted instructors, and technology delivered instruction. The following courses were conducted:

Table 10: Training Courses Provided by ICSD

Technology Tool	Courses Offered
Word Processing	Wang VS Word Processing Wang VS Word Processing Plus IBM DisplayWrite WordPerfect 5.1 for DOS MS Word for Windows
Spreadsheets	Lotus 1-2-3 (DOS) Lotus 1-2-3 Graphs Lotus 1-2-3 for Windows
Data Bases	dBase III dBase IV ADABAS Natural
Desktop Operating Systems	DOS Windows 3.1
Electronic Mail	IBM DISOSS Wang OFFICE
Mainframe Programming	COBOL COBOL Report Writer Job Control Language Time Sharing Option DYL280 Panvalet
Project Management	PC/70 MicroMan II for Project Members MicroMan II for Project Leaders
Development Methodologies	SDM for Users SDM for Systems Analysts SDM for Programmers
Networking Technologies	Video Conferencing Local Area Networks

By using in-house staff to conduct most of the above courses, the ICSD helped the State agencies in the Executive and the Judiciary Branches of Government to reduce their training expenses and to apply their limited training dollars towards their unique training requirements.

In addition to the above training courses, the ICSD partnered with the UH's College of Continuing Education and the College of Social Science's Department of Communication to develop a graduate certificate program in Telecommunications and Information Resource Management (TIRM). The 15-credit TIRM program ran for five years (1988-93) and bestowed a Graduate Certificate of Completion on more than 100 working individuals from State government. Many of these individuals now hold key positions in both the State and private sectors.

On October 1, 1994, due to reductions in the ICSD headcount, the staff in the ICSD's Education and Training Section was reassigned to support more critical needs of the State's information technology program. The information technology training function was shifted to the Department of Human Resources Development and its training providers.

Intergovernmental Coordination

As the central information technology and telecommunications agency for the Executive Branch of the State of Hawaii, the ICSD is responsible for coordinating the activities of many state agencies, government entities, and service providers who use telecommunications and information technologies statewide. The major coordinating responsibilities are:

Telecommunications and Information Technology Coordination and Policy Advisory Council

The Telecommunications and Information Technology Coordination and Policy Advisory Council (Council) was convened by the Director of Finance, as directed via House Concurrent Resolution No. 358 by the 1992 Legislature, through the ICSD Administrator to whom this responsibility was delegated. The basic mission of the Council is to develop short- and long-range strategic plans on telecommunications and information technology policy for the State of Hawaii.

The 1992 legislative resolution identified the following agencies to be members of the Council: State Senate, State House of Representatives, Director of Finance, Administrator of ICSD, Executive Director of Hawaii INC, Assistant Superintendent for Information Technology of the Department of Education, Director of Information Technology of the University of Hawaii, Chief Information Officer of the Judiciary, Executive Director of the Hawaii Public Broadcasting Authority, Department of Commerce and Consumer Affairs, Executive Director of the High Technology Development Corporation, Director of the Department of Business, Economic Development and Tourism and the Chief Information Officer of the Department of Transportation.

Four vendors were named as technical resources: GTE Hawaiian Tel, Fujitsu, AT&T and Long Distance USA/Sprint.

Hawaii Educational Networking Consortium

The ICSD is an active participant with the Hawaii Educational Networking Consortium (HENC) formed jointly by the University of Hawaii, Department of Education, and East-West Center. The ICSD's participation is based primarily on being the developer, manager and operator of the HAwaii Wide Area Integrated Information Access Network (HAWAIIAN), the State's private telecommunications system which is used as a communications transport by the HENC members. Planning for telecommunications facilities and services required by HENC and planning for future development and evolution of HAWAIIAN are being closely coordinated.

University of Hawaii

The ICSD and the University of Hawaii work closely together on telecommunications related planning, projects, issues and other activities, including:

- Cooperative planning for continued development of the HAWAIIAN fiber optic/SONET backbone system and the use of the University of Hawaii's campuses as HAWAIIAN hub sites;
- Expansion of the interisland digital microwave backbone system bandwidth that is required for communications with the University of Hawaii at Hilo, community colleges, and State agencies on the neighbor islands; and
- Facilitating access to the Internet by State agencies over the HAWAIIAN fiber optic/SONET and digital microwave backbone systems through the University of Hawaii at Manoa.

Department of Education

The ICSD works in close coordination with various Department of Education (DOE) staff in addressing their requirements for data, voice, and video communications and the overall directions for telecommunications facilities and services. DOE's requirements greatly impact ICSD's planning and specifications for the future development of the HAWAIIAN.

Planning for future hub sites for the HAWAIIAN is coordinated with the design of the data networks for the schools. In communities where State facilities are not available, schools are planned to serve as hub sites for both the HAWAIIAN and DOE data networks. The HAWAIIAN will serve as the wide area transport to connect the DOE data networks. Space, power, and cooling are some of the environmental details that need to be worked out at each school that is a prospective HAWAIIAN hub site.

The ICSD coordinates with DOE staff in identifying their voice communications requirements and developing possible solutions. The HAWAIIAN is being considered as the transport to connect telephone systems that are installed in the schools.

The ICSD coordinates with DOE staff in identifying their video communications requirements and participates in the long-range planning. The ICSD staff also coordinated with the DOE, the State Cable Television Division, and the cable television companies in the implementation of the DOE's current video network.

National Association of State Information Resource Executives

The ICSD is an active member of the National Association of State Information Resource Executives (NASIRE), a very pro-active, knowledgeable, and distinguished assembly of information resource executives and managers from the fifty states, six U.S. territories, and the District of Columbia. Private-sector firms and non-profit organizations also participate as corporate members.

The ICSD values its membership in NASIRE. ICSD participates in collecting data for NASIRE surveys, distributing reports prepared by NASIRE, and strives to participate in the annual national and western region conferences; however, budget cutbacks have virtually eliminated out-of-state travel for ICSD staff.

National Association of State Telecommunications Directors

The ICSD is an active member of the National Association of State Telecommunications Directors (NASTD), a very pro-active, knowledgeable, aggressive and distinguished assembly of telecommunications executives and staff from all fifty states and territories such as Guam and American Samoa.

The ICSD values its membership in NASTD and strives to participate in the annual national and western region conferences; however, budget cutbacks have virtually eliminated out-of-state travel and ICSD staff reductions have impacted ICSD's ability to participate in NASTD's information exchange projects.

Legislature

The legislature's public information system, ACCESS, is accessible through Hawaii FYI. The ICSD and legislative staff jointly planned, designed and implemented the connectivity between the legislature's computer system on which ACCESS runs and the packet switched data network that actually connects the caller to ACCESS through Hawaii FYI. The ICSD and legislative staffs continue to work together on improvements and other changes.

The Judiciary

The ICSD and the Judiciary staffs worked in close coordination in planning and designing the use of HAWAIIAN as the telecommunications transport for the Judiciary's network of telephone switches. Since their switches are located on Kauai, Oahu, Maui and Hawaii, use of the HAWAIIAN involves the transfer of telephone traffic between the interisland digital microwave backbone and intraisland fiber optic/SONET backbone systems.

The Judiciary and ICSD staffs have begun some initial coordination in exploring the possibilities of using the HAWAIIAN as the transport for video applications being considered for their court proceedings. Additional coordination will be required regarding their data networks since the redevelopment of multi-jurisdictional computer application systems such as the Child Support Enforcement, Offender Based Tracking System and Juvenile Justice Information System involve access to the Judiciary's host computer system.

Rainbow Council

The ICSD is an active member of the Rainbow Council, a consortium of State and federal public safety agencies that share the use of the Rainbow Microwave System, an analog microwave and radio system that provides statewide radio communications capabilities to the participating public safety agencies. The business of operating the Rainbow Microwave System is conducted through the Rainbow Council, including allocation and management of channels within the Rainbow frequencies, maintenance of the microwave and radio equipment and other related issues. The ICSD serves as the coordinator for the State agencies, which include State Civil Defense, Department of Land and Natural Resources and Department of Accounting and General Services.

The participating federal agencies are U.S. Customs, U.S. Coast Guard, Secret Service, Drug Enforcement Agency, and Federal Bureau of Investigation. Hawaii is the only State where these federal agencies have received this level of cooperation. The Rainbow Microwave System is vital to the operation of these agencies since it provides their agents in the field with essential radio communications capabilities during the execution of their activities which include drug enforcement and security.

Internal Revenue Service

The ICSD coordinated the Internal Revenue Service’s connectivity through the State’s SNA network to access the Department of Human Services’ IBM host computer system, the Judiciary's IBM host computer system, and the City and County of Honolulu's IBM host computer system.

Shared Use of Microwave Facilities

The ICSD continues to coordinate the shared use of its interisland microwave facilities (towers, buildings, batteries, backup power) for the HAWAIIAN and the Hawaii Interactive Television System (HITS) microwave backbone systems. ICSD also coordinates the maintenance of these microwave facilities.

Summary

The accomplishments and progress made by the ICSD since the publishing of the Master DIPIRM to use information and communication technologies to facilitate and improve State operations has been significant. Through the replacement or application of technology, the ICSD has saved the State several million dollars annually as well as reduced the cost to provide necessary State services.

However, the technology is constantly changing and evolving. During the past five years, the industry's life cycle for the development and introduction of new or improved technologies has been shortened from 36 months to 18 months, while the demand for automation has continued to increase. Therefore, change is constant, which, in turn, will require continuous evaluation and improvement of the services already provided by the ICSD. The ICSD has been transitioning to new directions and goals, and a new plan to enable the Hawaii State Government to:

- Continue to provide essential support services to the State agencies.
- Expand and enhance its current technology base.
- Take advantage of emerging technologies.
- Prepare the State of Hawaii to enter the 21st century.

PART 2 - DIRECTIONS AND GOALS

The directions, goals, and projects set forth are not inclusive, but they identify what needs to be done in the foreseeable future. A survey of the departments was conducted by the ICSD in February 1997. The input from the survey helped with the development of the IT goals and projects. The goals and projects may change to better meet the changing needs and requirements of the State that are necessitated by legislation, State operations, and opportunities to provide government services which are more effective, less expensive, and faster.

Telecommunications Services

With the basic installation of the HAWAIIAN completed, the first generation of the State of Hawaii's telecommunications superhighway is in place. The next logical step is to continue to expand this system to link State offices, and to provide interfaces to other public and private networks locally, nationally, and internationally to better service State agencies and the public which they serve.

The ICSD will continue to develop and provide a state-of-the-art technology infrastructure to support the delivery of information systems.

Achieving Goals Through Information Technology Initiatives

Goals	IT Projects
Satisfy increasing requirements for telecommunications bandwidth to provide data, voice, video integration, and image processing services.	Expand the capacity of the HAWAIIAN. Develop and implement the State Intranet. Evaluate wireless LANs. Continue to upgrade SONET infrastructure and migrate to a switched backbone network, such as ATM, to provide greater bandwidth and capacity. Continue to expand network connectivity to State offices and workstations. Enhance and expand video capabilities for intrastate, interstate, and international communications. Convert State video conferencing system to H.320 standard based system. Initiate desktop video conferencing for local, national, and international communications.
Satisfy agency requests for new or replacement telephone sets and systems.	Continue to support changes in telephone requirements. Initiate Key System Units (KSU) bid. Initiate Pay telephone bid.
Continue support of public safety programs and administer Public Safety radio frequencies, policies, and procedures.	Provide a survivable, fault tolerant backbone for land mobile radio interconnection based on the HAWAIIAN.

	Provide an 800 MHz trunked radio system that supports statewide government communication needs.
	Coordinate and expand the State's inventory of key radio sites and facilities, and other infrastructure.
Improve telecommunications emergency preparedness.	Develop State's telecommunication emergency response and recovery plan in accordance with State Civil Defense Plans.

Benefits to the State

Increased bandwidth (system capacity) of the State-owned telecommunications infrastructure will:

- Accommodate increased development of departmental and agency information systems.
- Provide increased efficiency of government at a reduced cost.
- Better satisfy the growing needs for inter/intra agency connectivity for voice, data, video, and image processing.
- Ensure that State agencies and Hawaii taxpayers are served by an economical system that can keep pace with technology.

A statewide radio trunking system is necessary and will:

- Provide for the efficient use of the currently overcrowded radio spectrum.
- Provide interoperability and essential communications between public-safety agencies to better service the public.
- Improve security and responsiveness of government personnel.

Expanded communication antenna sites and facilities will:

- Provide added options to better radio and microwave communications.
- Have the potential for generating additional revenue should the State chose to lease excess facility and/or antenna space to commercial providers.

Computer Application Services

The ICSD is committed to improving the efficiency and effectiveness of State programs through the use of computer and telecommunications technologies. Computers and telecommunications systems are presently more powerful, less expensive, easier to operate, and applicable to a wider range of uses. Information is now more accessible and often instantly available to government workers.

The ICSD needs to change and improve its computer application services to better meet the business needs of State programs by taking advantage of emerging computer and telecommunication technologies which will improve the accessibility and reduce the cost of processing and distributing information.

Achieving Goals Through Information Technology Initiatives

Goals	IT Projects
Improve public access to State government information.	Become a major Information Service Provider (ISP) for State government by coordinating and facilitating access to government information.
	Expand Internet accessibility.
Improve government operations with information technologies.	Continue expansion of e-mail to incorporate all State agencies and local government.
	Implement Intranet services and applications.
	Continue to provide technical and administrative support to agencies with local area networks (LANs).
	Develop and implement interactive applications to facilitate forms filing and submission of information such as registrations, permits, and payments.
	Implement interactive voice response (IVR) systems.
	Expand image processing services.
Encourage the involvement of end-users in the application development process.	Re-define the roles and responsibilities of the end-user (or client) in the development process.
	Provide tools and training for ad hoc reports.
Expand support for information systems development.	Continue to develop and support critical business application systems for State agencies.
	Provide a professional information technology staff to design, develop, support, and maintain systems.
	Assist and support the agencies in the use of systems development software and databases.
	Provide professional guidance and assistance in systems and database design and problem resolution.
	Design and review training curriculum for systems analysis, programming, and database management for the new environments.
Improve support for information technology users.	Continue to provide services that guide and support the selection of “standard” hardware and software products, including developing training curriculum, assisting with current software and resolving associated problems; and evaluating new releases and products.

Benefits to the State

Improving computer application services is essential to better meet customer requirements, use computer resources efficiently, satisfy long-term information resource management goals, and reduce the cost of processing and distributing information. The benefits are:

- The application and use of the appropriate technology to solve a problem.
- The development of creative, innovative solutions to business problems that satisfy user requirements and are easy to maintain.
- The reduction of the State's dependency on costly third-party consultants.
- The freeing of resources to implement new technologies, which ought to lower the cost of IT services while improving government operations and access to information.

Computer and Network Operations Services

The basic functions required to keep the ICSD's centralized computing services continuously operational must be maintained to insure the effectiveness of critical public health and safety applications. This requires a centralized computing service that is reliable and resistant to natural or man-made disasters, satisfy the demand for service in a timely manner, and minimize the total cost of providing this service.

The ICSD needs to continue with a managed implementation of technologies to produce services that are reliable, efficient, and cost effective.

Achieving Goals Through Information Technology Initiatives

Goals	IT Projects
Improve the reliability of basic computer and network operations.	Implement an Emergency Power Continuation Plan. Initiate processes to design and build a second computer and network site as part of disaster recovery. Expand network monitoring and support coverage to 24 hours per day, seven days a week, including holidays. Expand network monitoring to all networks in State government, including wide area, local area, and SNA networks.
Improve efficiency and price/performance of the central data center while accommodating workload growth.	Implement point of capture or automated data entry facilities. Expand the automation of computer and network operation and management. Implement alternative technologies for producing computer output. Implement on-line production documentation.

Expand the services provided to support the implementation and use of open systems and enterprise wide client/server environments.	Implement firewall and other security measures. Expand mainframe communications connectivity to TCP/IP for host applications. Expand automated tape cartridge facility to LAN and minicomputers. Implement reliable hard disk storage that is accessible by mainframe, minicomputer, and LAN systems. Implement a solution to consolidate the support and operation of multiple servers.

Benefits to the State

Reliable computer and network operations are essential, and for some health and public safety systems, critical to the users of these application systems. The completion of the projects above will enable the State's central computer facility to:

- Increase the availability of computer and network services.
- Improve the efficiency and price performance of its operations while accommodating workload growth.
- Expand the services to support the use of open systems and enterprise wide client/server environments.

Information Resource Management and Administrative Services

Information and communication technology resources are key for the continued operation and delivery of State services to Hawaii's citizens. These resources must be centrally coordinated, managed, and guided to provide the best technology solutions at the lowest possible cost, and made available for all State departments to use.

The ICSD needs to continue to provide central management and coordination for the use of information and telecommunication technologies to enable the Executive Branch of Hawaii State Government to accomplish the following:

- Support the reengineering activities of government.
- Improve the ability of government to provide services to its citizens in a timely, convenient, and efficient manner.
- Enhance the accessibility of government.
- Maximize sharing of information and elimination of redundant record keeping, resources, and services.
- Encourage agencies to be innovative.

Achieving Goals Through Information Technology Initiatives

Goals	IT Projects
Initiate and coordinate the development, implementation, and update of statewide strategic directions and operational plans.	Create and participate on task forces and subcommittees to develop statewide IT direction.

	Identify areas of multi-agency interest where State policies and procedures are needed and initiate actions that lead to the establishment of those policies.
	Study and develop recommendations for an information resource management strategy.
	Review and update all existing computing and telecommunication policies and procedures. Develop new policies and procedures as related to Internet, electronic commerce, imaging, wireless communications, and other emerging technologies.
	Develop and publish strategic and operational plan.
	Develop and publish planning guidelines for the agencies.
Develop statewide IT standards and guidelines.	Research State requirements and acquire a new Systems Development Methodology; distribute, train, implement, and enforce statewide use.
	Develop standards, guidelines, and conventions for new information and telecommunications technologies adopted by the State.
	Research technologies and requirements to place all standards on-line for all agencies to use.
Assess IT trends and serve as information resource for the State's Executive Branch.	Research, evaluate, plan, and implement new technologies.
	Monitor federal, State, and corporate IT trends and disseminate collected information to agencies.
	Monitor activities in the Telecommunications Act of 1996, the Federal Communications Commissions (FCC), and the Public Utilities Commission.
	Monitor national regulatory issues related to public safety wireless communications.
	Assess the needs of the ICSD customers and use the feedback to improve the services the ICSD provides.
Monitor and foster the State's progress to become Year 2000 compliant.	Coordinate and monitor Year 2000 Compliance Project.
	Coordinate efforts of State agencies to become Year 2000 compliant.

	Modify critical applications maintained by the ICSD so that they are Year 2000 compliant.
Provide input for an improved IT and TC procurement.	Review agency requests for hardware, software, and services in accordance with administrative directives and Hawaii Statutes. Coordinate with the State Procurement Office to explore innovative solutions for the acquisition of information and telecommunications technologies.
Provide project management for state-wide IT projects.	Provide project management and statewide coordination on projects that require the participation of multiple agencies. Continue to oversee any project that will cost more than $100,000 as mandated by Section 212A, Act 299, Session Laws of Hawaii 1990.
Provide for better staff development.	Identify and coordinate the acquisition of training for proprietary products, tools, programming languages, and other technical areas, such as Information Engineering; Database design; Joint Application Development; Business Process Engineering; Distributed Computing Design and Development; Computer Programming; System Development Methodologies; and New Products and Techniques.

Benefits to the State

The importance of a strong, cohesive information technology (IT) program is essential for the State of Hawaii. A strong IT program provides the appropriate organization and tools to enable State departments and agencies to focus on core business competencies and to efficiently deliver information and services to Hawaii's citizens.

Emerging Technologies

Emerging technologies provide opportunities—opportunities for reengineering government through productivity and efficiency improvements; improving access to information and government services; and potentially reducing the cost of government operations.

The ICSD needs to continue to develop, research, pilot, and roll out support and services for new technologies. Some technologies that have emerged or will be emerging shortly in the next few years are listed in Table 11. This is not an exhaustive list. As other technologies emerge, they will be examined and researched for viability in the State.

Table 11: Emerging Technologies

Technology	Description
Desktop videoconferencing	A new paradigm for communications where the participants sit at their own desks, in their own offices, and call up participants using their personal computer in a manner much like a telephone.
Internet	All of the networks using the Internet Protocol (IP) joined together into a seamless whole. It provides access to databases and archives around the world.
Intranets	A network connecting a set of clients using standard Internet protocols, just like the Internet. Usually secured behind a security gateway called a "firewall."
ATM Switched Networks	A very high speed telecom transmission technology that provides switching services and bandwidth on demand. The benefit is that the user uses what is necessary at the lowest possible cost.
Wireless LANs	LANs that enable access to information without being connected by a physical cable, provides support for mobile and roaming users in a campus, reduction or elimination of cabling costs, and provides the ability to keep employees informed and responsive to customer needs anywhere, anytime.
Electronic Commerce	Encompasses all business operations and transactions based upon communication via electronic media. Includes EDI.
Electronic Data Interchange (EDI)	A standard that allows for the transmission of purchase orders, shipping documents, invoices, invoice payments, etc., between an enterprise and its suppliers, customers, subsidiary, and any other organization with which an enterprise conducts business.
Electronic Benefits Transfer (EBT)	A new way to distribute public assistance and other government benefits using a "debit" card.
Workflow systems	The methodologies used to combine a sequence of events, or business practices, with software technology. When combined with business process engineering, workflow can drastically reduce the time required to complete tasks
Document Management System	Allows users to track all documents (word processing, spreadsheets, images, video clips, etc.) on all networks; provides automatic document archiving, version control, fast full-text searching, and security access.

In addition to these emerging technologies, there are and will be increasing requirements to provide network interconnectivity and interoperability among federal, state, and local governments. This will involve the development and implementation of higher levels of security, bandwidth, application interoperability, and data sharing based on Internet and Intranet standards. Currently, the ICSD's host computers have connections to the Judiciary, the City and County of Honolulu, Maui County, Hawaii County and the Federal Government. The ICSD foresees the number of connections and on-line sessions increasing as our governments collaborate on the development of new information systems that are beneficial for all parties.

Challenges

The implementation of the ICSD's information technology (IT) overview will need to surmount a variety of challenges which are:

Interdepartmental cooperation and sharing of technical information. Each department and agency is driven by its specific missions and functions, servicing a certain constituency and subject to unique pressures. Their State appropriations and other funding sources depend first and foremost on meeting their mission requirements. As a result, departments and agencies have been allowed to develop their own capabilities for implementing and managing their IT assets. While independent IT functions are beneficial, they also mean duplication of costs and resources. Technical solutions, capabilities, and expertise are repeated across many departments, at no small expense. Everyone "reinvents the wheel" and each department tries to

establish its own technical experts and pool of knowledge. This increases overall IT costs. There is a need to manage and coordinate efforts statewide to reduce the total cost of ownership for IT while continuing to position IT services and support such that employees and citizens have access to the information they need when they need it.

Strategic IT planning. The State's IT program is an asset to nurture and optimize. It does not exist for itself but for the various State programs that serve the public. IT should not be regarded as just an administrative support function but also an essential mechanism for providing departments and agencies with needed services. Strategic business planning and IT planning are currently conducted independently. With no direct participation in making strategic business decisions, IT planning can only be reactive, and opportunities for creative application of IT may be lost. IT planning is an ongoing process, requiring direct user involvement/coordination, to ensure that all IT systems, services, and activities are consistent with the overall direction of Hawaii State Government.

IT resource limitations. The ICSD does its best to keep up with rapidly changing technology to support the increasing pace of agency operations and requirements while facing budget-driven pressures to do more with less. Budget and personnel cuts have affected the ICSD's capability to provide critical and essential services. The State's total cost of IT ownership (the sum of expenditures by all departments) for computers and communications have been increasing while the ICSD's budget has been reduced by more than 39% from fiscal year 1992. A summarization of the cuts made to the ICSD's resources are provided in Figure 5 and Figure 6.

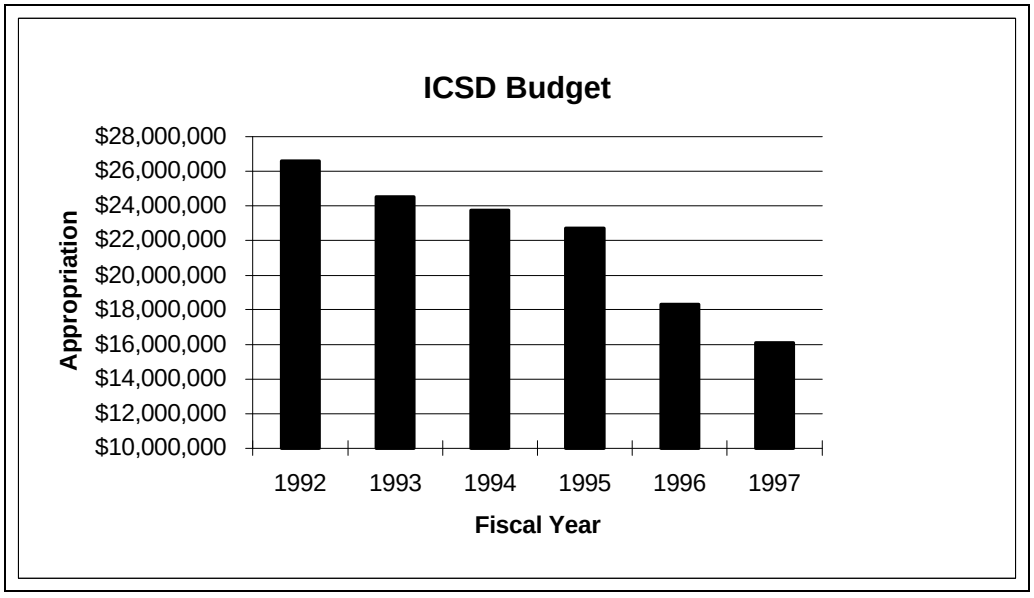


Figure 5: ICSD Budget

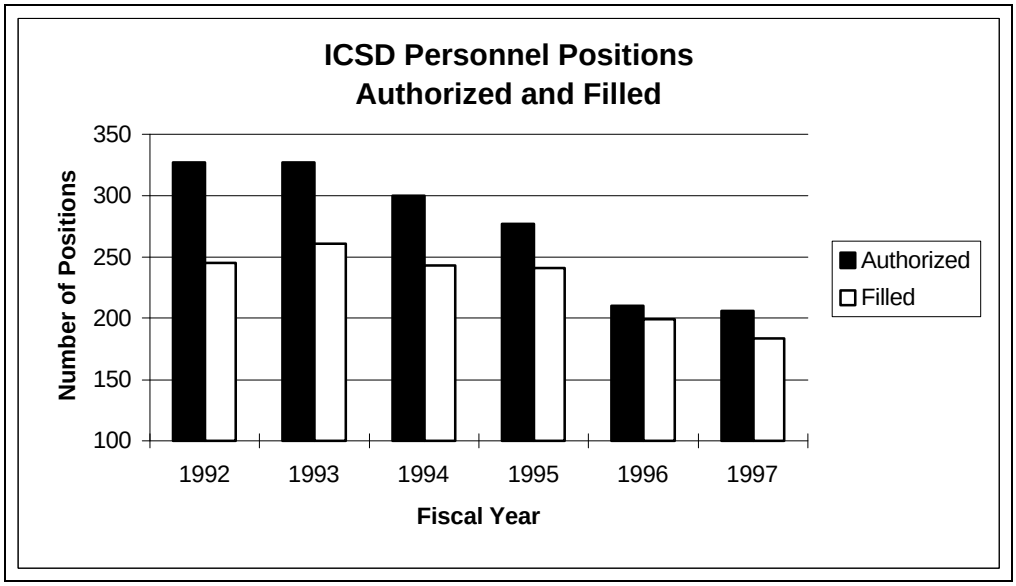


Figure 6: ICSD Full-time Personnel Headcount

The severe cutbacks in resources have forced the ICSD to restructure and refocus its programs and services to support current critical requirements and to fit the current austere economic climate. The ICSD is continually re-assessing its priorities in order to assign its resources appropriately to maintain high-quality work in the services it provides. The demand for services and support in planning, designing, developing, implementing, and maintaining information processing application systems and HAWAIIAN have been increasing while the ICSD has incurred regular reductions in staffing and funding. It is paradoxical that the ICSD's budget has been continually reduced while at the same time other State agencies have had increases in staff and funding for large computer application projects that require additional resources and support from the ICSD.

Today, the ICSD's computers and communication services and capabilities are an integral part of almost every State agency's daily operation and its delivery of services to Hawaii's citizens. Communications is a good example of using technology for productivity gains, cost-benefit gains, and improving public services. In general, computer costs and communication services rates are decreasing. However, overall costs increase because of higher usage, faster rates of technological obsolescence of services/products, and new developments of applications and services. Sufficient funding is essential to the computer and communications program for migrations to new technologies, equipment upgrades, software updates, and other developments to ensure that the needs of State agencies are met.

Furthermore, State services to the public are too vital to relegate them to total reliance on commercial service providers. Service levels from commercial providers undergo constant changes because profit and loss statements have major impacts on their staffing, service coverage, and continued operation in Hawaii. The public needs stability in the services provided to them; this is what the ICSD and the State's IT program offers.

The ICSD requires additional positions to meet the continually growing demands from State agencies for communications and computer application services and support. For example, some departments submitted budget requests for additional IT staff positions in order to do what the ICSD was doing before the services and positions were cut from the ICSD's budget. Although the ICSD has had 154 positions cut from its budget, it continues to provide assistance to all agencies in the evaluation, selection, and implementation of computer and communications systems, services, applications, and new technologies. In order to attain our objective of improved long-term efficiency, effectiveness, and productivity within the computer and communications arena, management and support for this environment must be provided

internally (within the State). This is the only way to have all agencies moving in the same direction at the same time.

Procurement laws. The current procurement laws do not address the acquisition of computer products such as hardware and software. Hardware and software are constantly changing, often at a rate that makes current technology obsolete within a very short period of time. In addition, software tends to be very proprietary in nature due to intellectual property rights and trade secret laws. Administrative procurement rules and definitions, processing timeframe requirements, and statutory restrictions do not address these types of conditions, and limits our ability to acquire new technology quickly and efficiently. The ICSD and the State Procurement Office must continue to improve the process for acquiring computer and communication hardware, software, facilities, and related products and services.

IT staff development. As stated earlier, the austere fiscal condition of the State has been harsh on both budget and staffing levels. To use our remaining valuable and limited human resources in more creative ways, reengineering government operations becomes essential. Nearly all reengineering efforts rely on IT to provide the "streamlining" of the business processes. The need for a skilled IT staff to facilitate the reengineering effort becomes imperative. Therefore, the ICSD must continue, even with budget cuts, to find ways to enhance the knowledge, skills, and expertise of the State's IT staff in order to keep up with industry trends, advances in the use of computer and communication techniques and methods, and to provide hands-on training experiences in the implementation of new types of information and communication systems.

Year 2000 Compliance Project and new laws and mandatory requirements. The importance of revising the many computer programs that need to become Year 2000 Compliant cannot be overemphasized. But the lack of resources and other detractors will continue to hinder the efforts of the State and its IT staffs to prepare for this unmovable date. New legislation and laws of the Federal and State governments must be implemented. Lack of funding for additional positions, even temporary positions, requires the same IT staff to do both year 2000 work and mandatory requirements work. The State also lacks additional funds to contract with private sector firms to augment the State's full-time IT staff. A moratorium on all new development that is not required by law may be necessary in order to free up resources for the Year 2000 Compliance Project.

Conclusion

Rapid advances in technology, decreased costs of computers and components, and increased reliance on computers in the work place have led to a dramatic increase in the use of computer and communication systems in Hawaii State Government. Because of these trends, new strategies and programs need to be developed and implemented to prepare for the challenges of the 21st century.

The Information and Communication Services Division (ICSD) has demonstrated that it has the ability to meet technological challenges. The ICSD maintains and improves a statewide telecommunications network, provides computer application services which encompass a broad spectrum of technology from the Internet to mission critical mini/mainframe based computer systems, provides centralized computer and network operations, and provides administrative assistance and directions (policies and standards) to promote and guide information resource management and expedite the acquisition of computer hardware and software. And over the years, the cost of the services from ICSD have been at least two to three time less than it would cost in the commercial sector.

Given the resources needed to implement the information technology initiatives described in this overview, the ICSD will be better prepared to provide the timely delivery of application and communications services to our departments, agencies, and citizens into the 21st century in a cost-effective manner.

Appendix 1

Summary of Services

Summary Of Services

Information Processing

Analyze, develop, implement, and maintain host application systems; maintain over 8,300 programs and 3,000 files that support over 90 application systems such as:

- State Payroll and Personnel Systems
- FAMIS - Vendor payments
- Comprehensive Net Income Tax System
- General Excise Tax System
- Transient Accommodations Tax System
- Housing applications
- Employees' Retirement System
- Employees' Health Fund
- Worker's Compensation
- Unemployment Insurance
- Criminal History Information
- Geographic Information Systems
- Image Processing Systems

Acquire, maintain, operate and manage multiple host mainframe and mid-range computer systems that have over 600 operating and utility software products as well as the communication interfaces in support of ICSD and agency developed/maintained applications. Provide central computer facility and support services to State agencies for their daily operations and servicing of the public.
Some agency applications operated by ICSD are: Public Welfare and Social Services, DOE Student Information System and Financial Management System, and Vital Statistics.

Provide multiple customer support services. Provide consulting, planning, design, installation, troubleshooting, maintenance, and management of LANs, E-mail, and office automation systems. Maintain customer premise equipment such as telephones, modems, terminals, and personal computers.

Provide consultation, assistance, advice, and integration planning, and direct participation in projects to develop new application systems to run on one or many operational environments, such as PC, PC LAN, and mid-range systems.

Communications

Provide communication network services for data, voice, video, image, and radio. Develop, manage, operate, maintain, and troubleshoot the statewide communications infrastructure and networks, which includes:

- Hawaii Wide Area Integrated Information Access Network infrastructure components:
  - Statewide Digital Microwave System
  - State Conduit Infrastructure System
  - Statewide Telecommunications Infrastructure and Cabling
  - Fiber Optic Cabling
  - SONET Technology
- State Telephone System
- Video Conference Centers
- Communications facilities coordination and cabling consulting for State buildings/projects
- Statewide Public Safety Radio System
- Provide communications services and support for State programs, including Education, Health, Human Services, Public Safety, and Civil Defense.

Develop and operate the State's information network gateway system as directed in Act 1, SLH 1988, Special Session, to facilitate intergovernmental and public access to information and systems, and improve statewide data, voice, and video communications.

Provide consultation and strategic planning for telecommunications and interconnecting government networks.

Administrative Services

Conduct technical and administrative reviews of all bids and contracts for systems that will cost more than $100,000 (ICSD Circular 90-1).
Review and approve purchases of computers and related equipment that cost more than $1,000.
Review referrals and correspondence from the Governor's Office and prepare appropriate replies.
Plan, develop and execute bid specifications/requests for proposals to establish computer hardware and software price lists for statewide and internal purchases.
Provide consulting services and guidance to State agencies in the development of bids and contracts.

Plan, develop, publish, and maintain statewide information processing and communications standards, guidelines, conventions, and procedures to ensure effective and compatible utilization of computer and communication resources in State government.

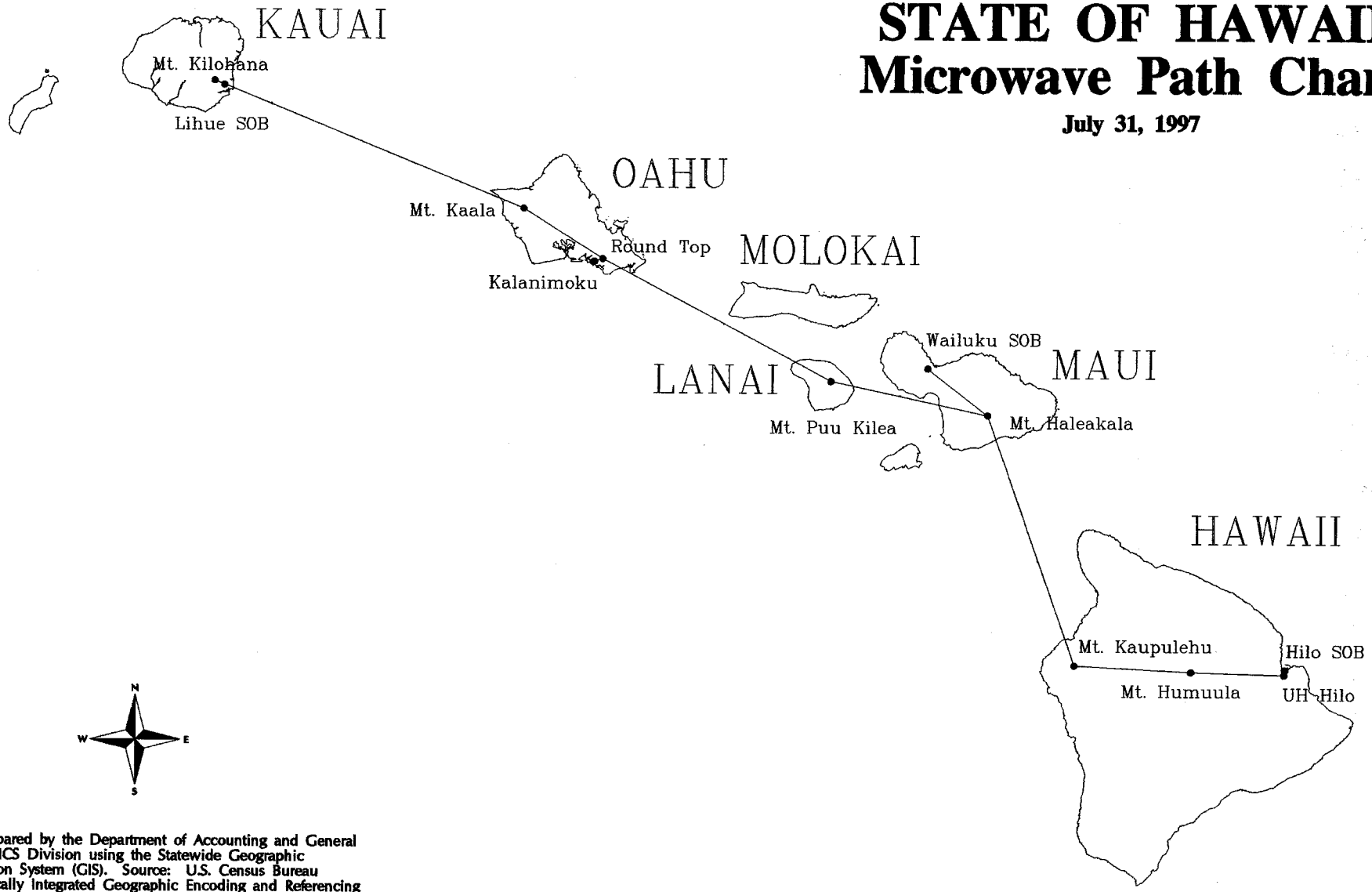
Provide assistance and advice to State programs in strategic and operational planning for the use of information and communication technologies through development of information technology plans; review and maintain current copies of the IT plans for all Executive Departments.

Appendix 2

State of Hawaii
Digital Microwave Path

STATE OF HAWAII
Microwave Path Chart

July 31, 1997



Map prepared by the Department of Accounting and General Services ICS Division using the Statewide Geographic Information System (GIS). Source: U.S. Census Bureau Topologically Integrated Geographic Encoding and Referencing (TIGER) system. Accuracy of the map is limited to the accuracy of the TIGER data.

Appendix 3

HAWAIIAN Fiber Optic Backbone

Hawaii

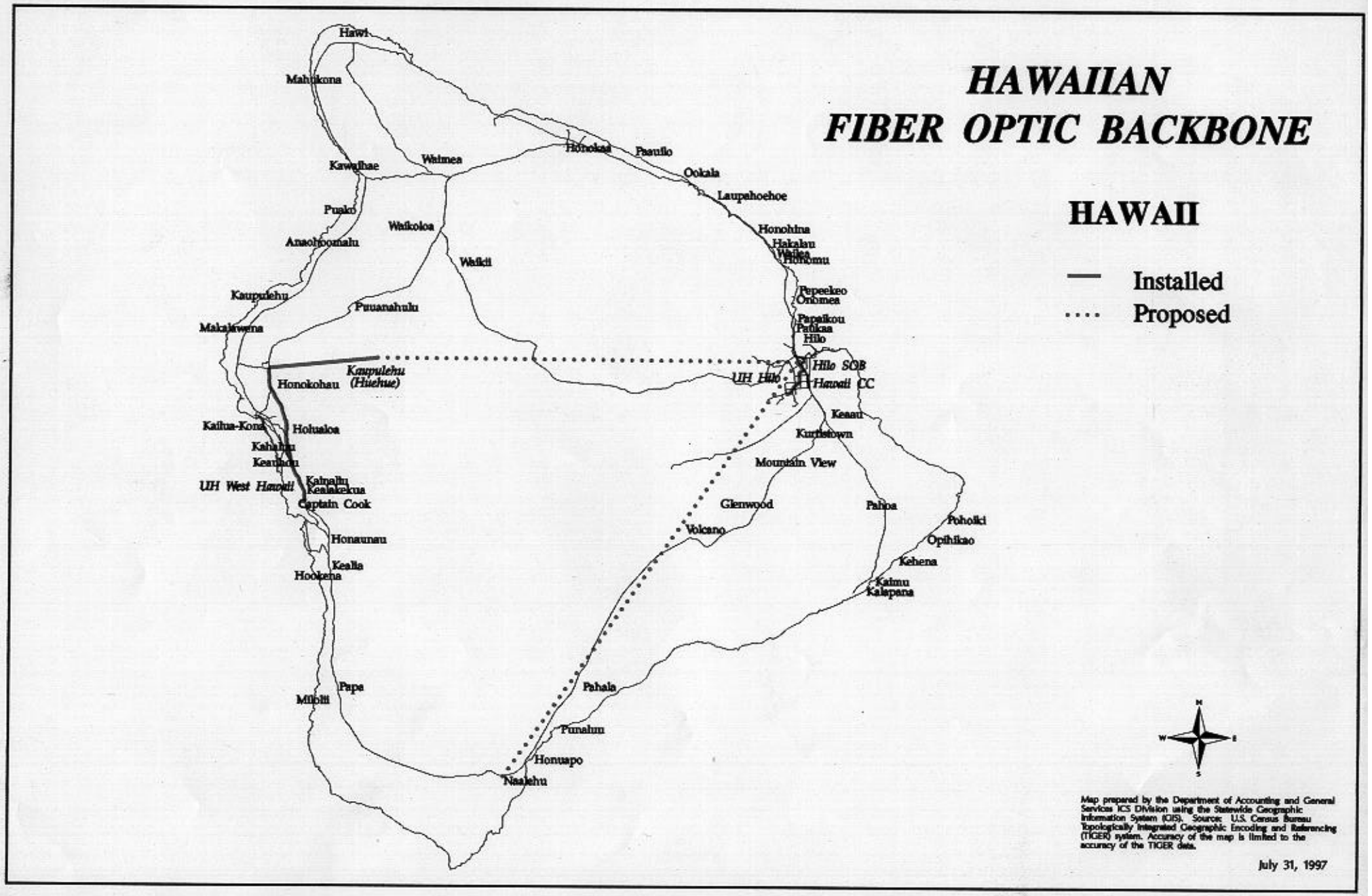
Kauai

Lanai

Maui

Molokai

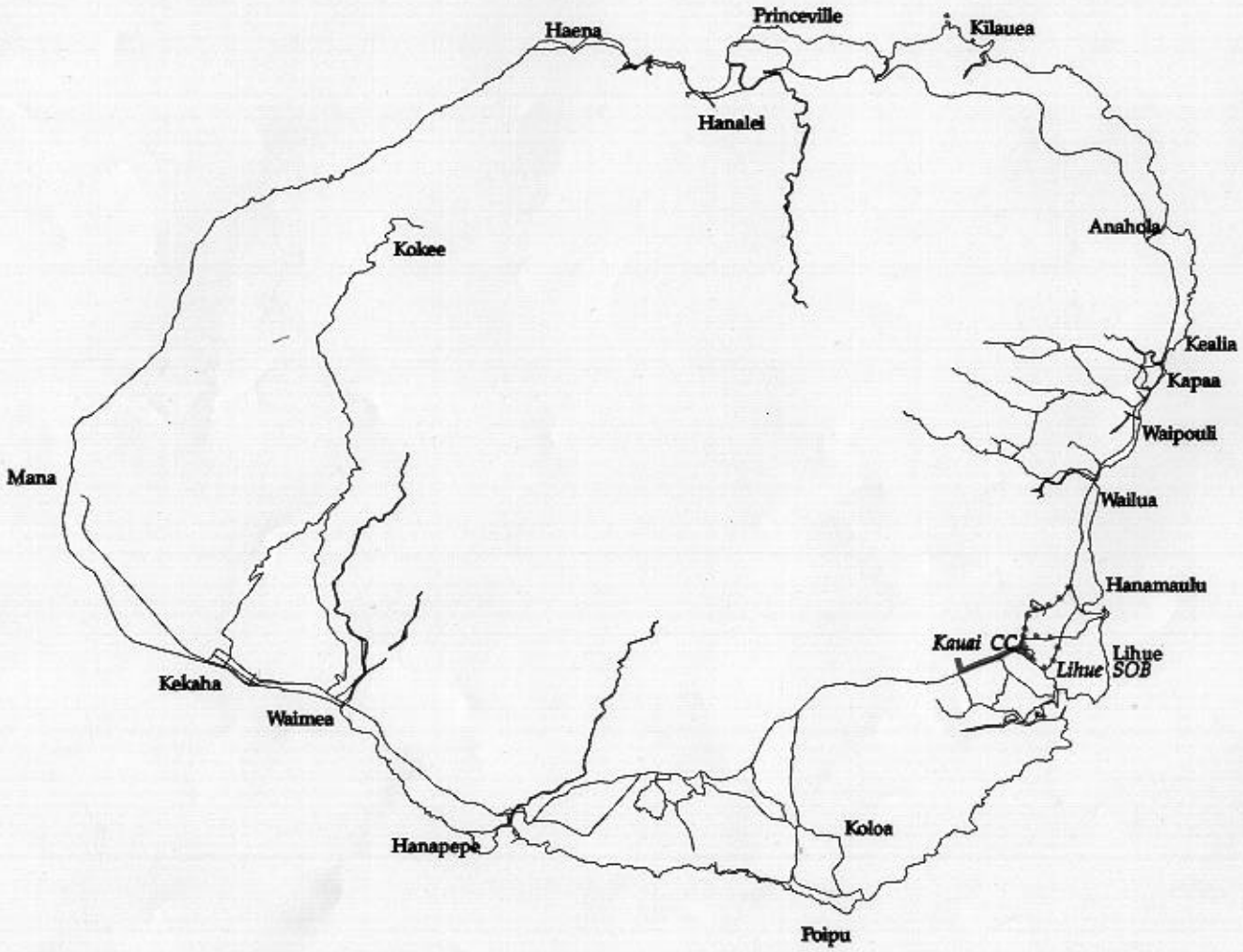
Oahu



Map prepared by the Department of Accounting and General Services ICS Division using the Statewide Geographic Information System (GIS). Source: U.S. Census Bureau Topologically Integrated Geographic Encoding and Referencing (TIGER) system. Accuracy of the map is limited to the accuracy of the TIGER data.

July 31, 1997

HAWAIIAN FIBER OPTIC BACKBONE



KAUAI

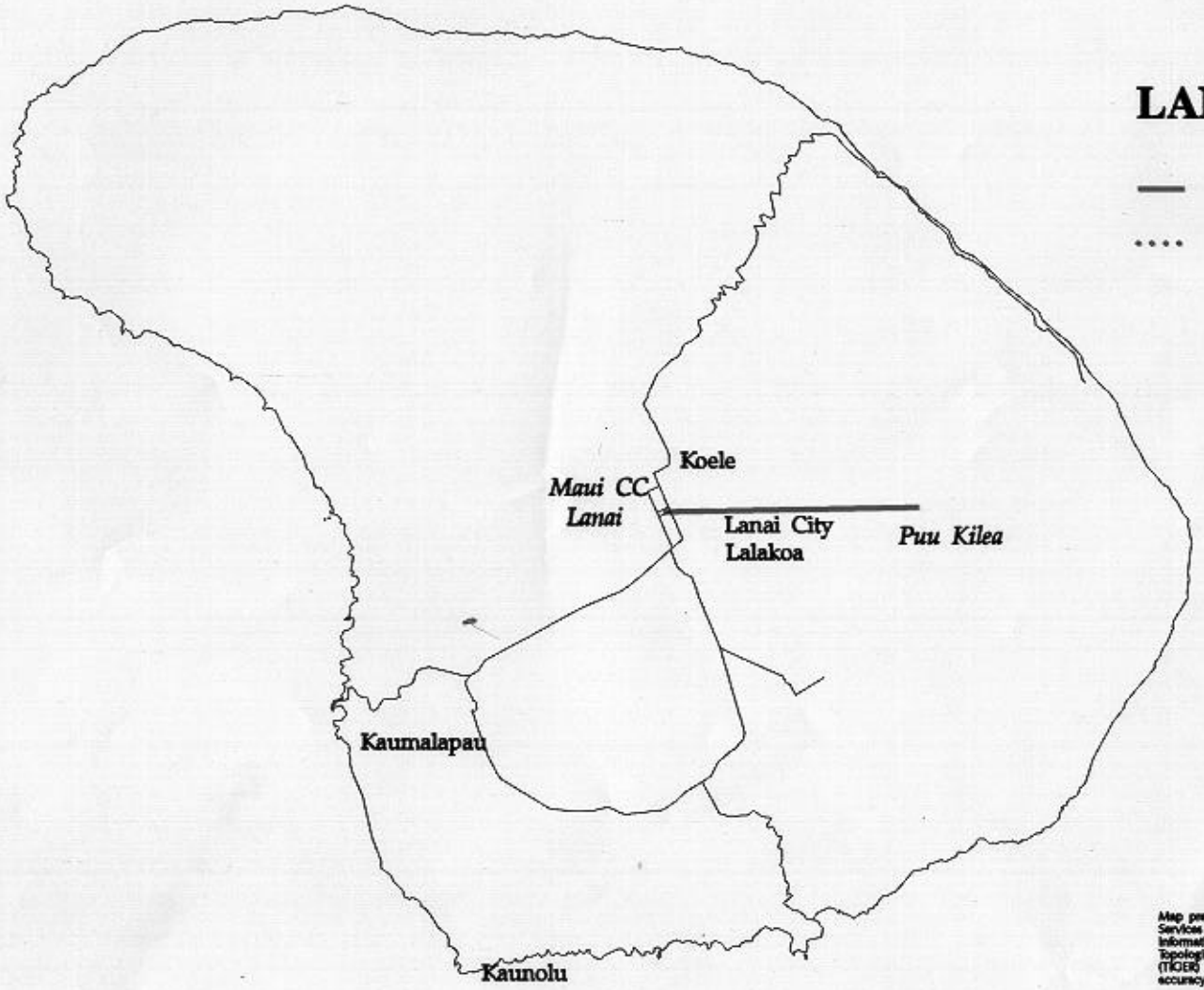
— Installed

···· Proposed

Map prepared by the Department of Accounting and General Services ICS Division using the Statewide Geographic Information System (GIS). Source: U.S. Census Bureau Topologically Integrated Geographic Encoding and Referencing (TIGER) system. Accuracy of the map is limited to the accuracy of the TIGER data.

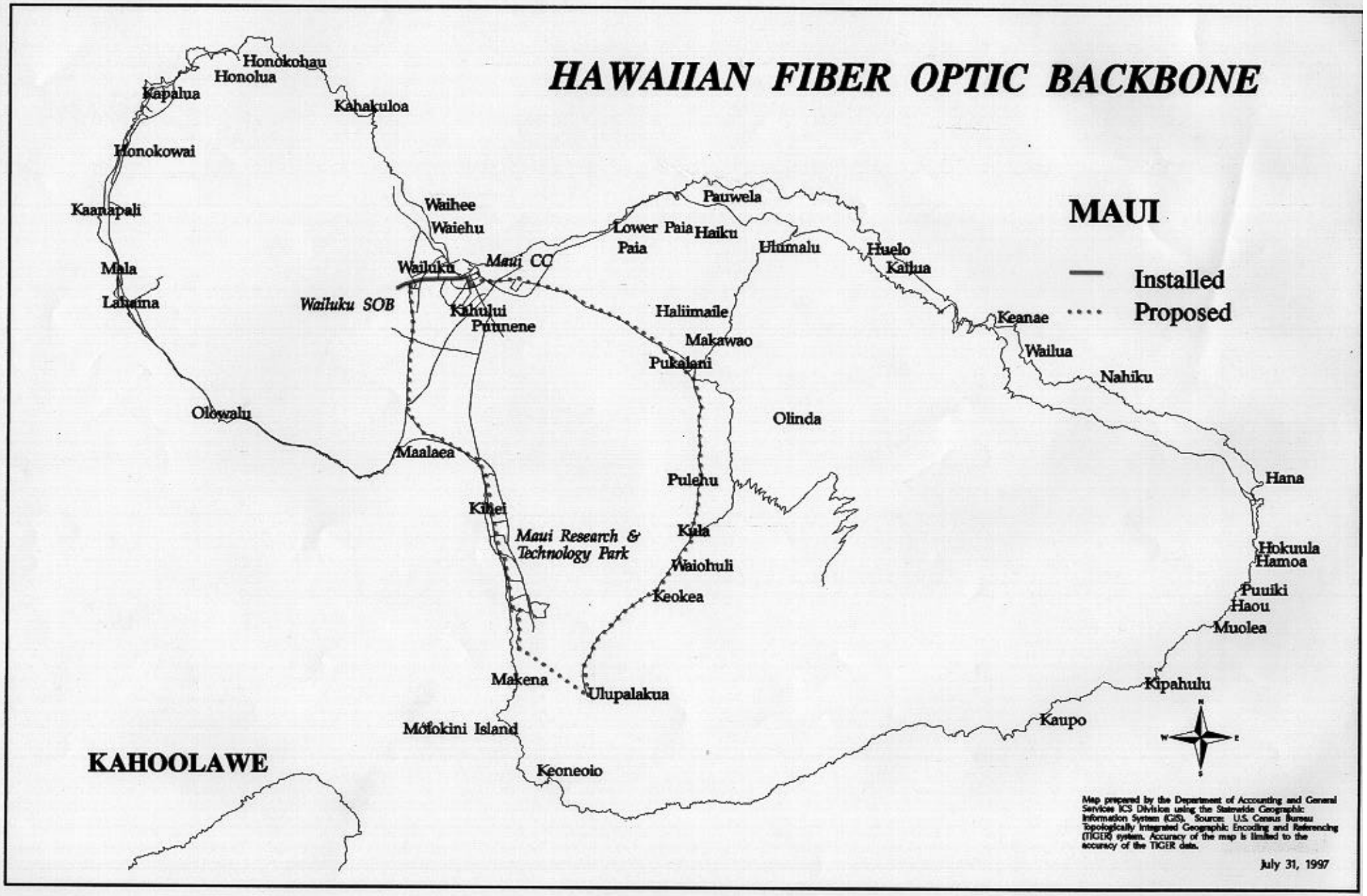
July 31, 1997

HAWAIIAN FIBER OPTIC BACKBONE



Map prepared by the Department of Accounting and General Services ICS Division using the Statewide Geographic Information System (GIS). Source: U.S. Census Bureau Topologically Integrated Geographic Encoding and Referencing (TIGER) system. Accuracy of the map is limited to the accuracy of the TIGER data.

July 31, 1997


HAWAIIAN FIBER OPTIC BACKBONE
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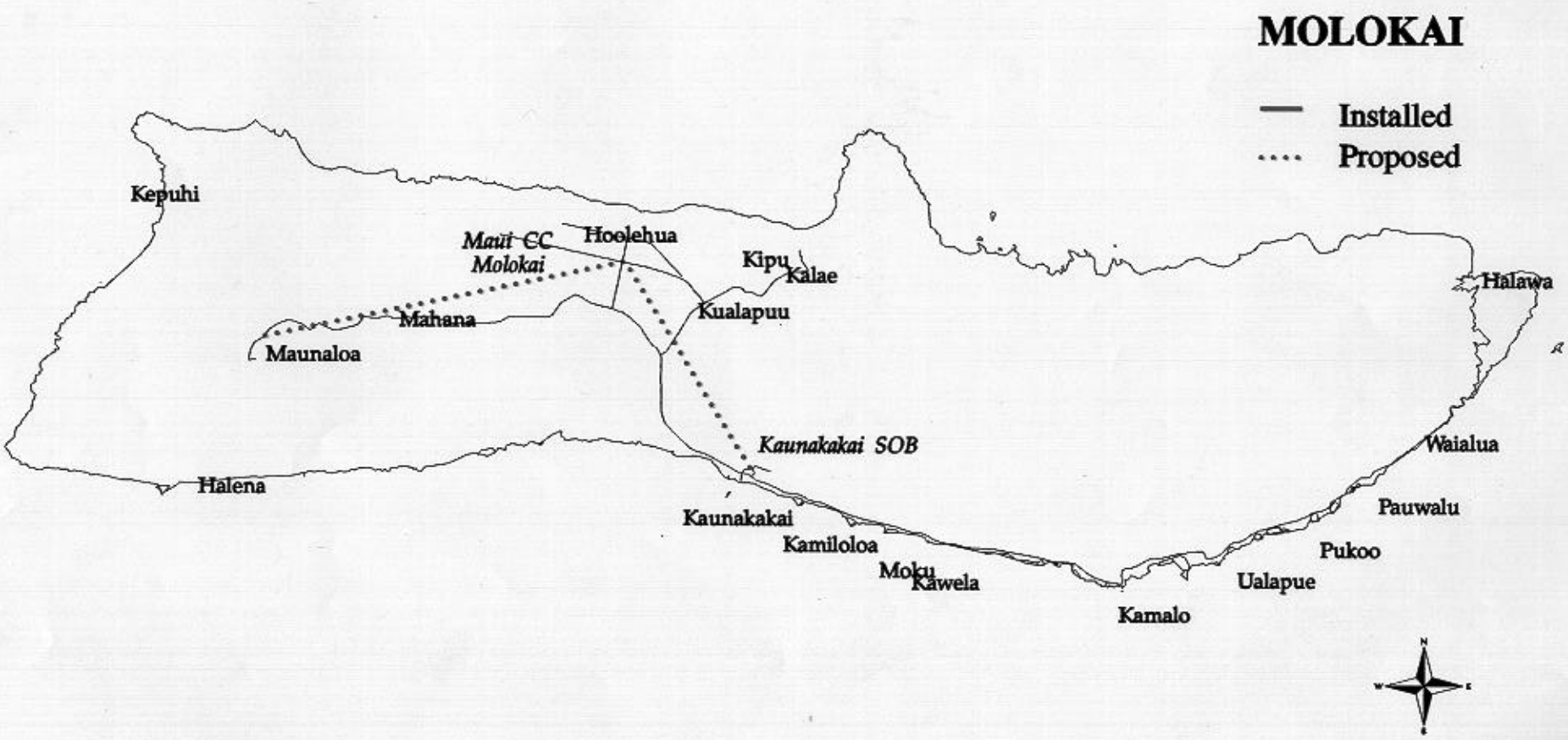
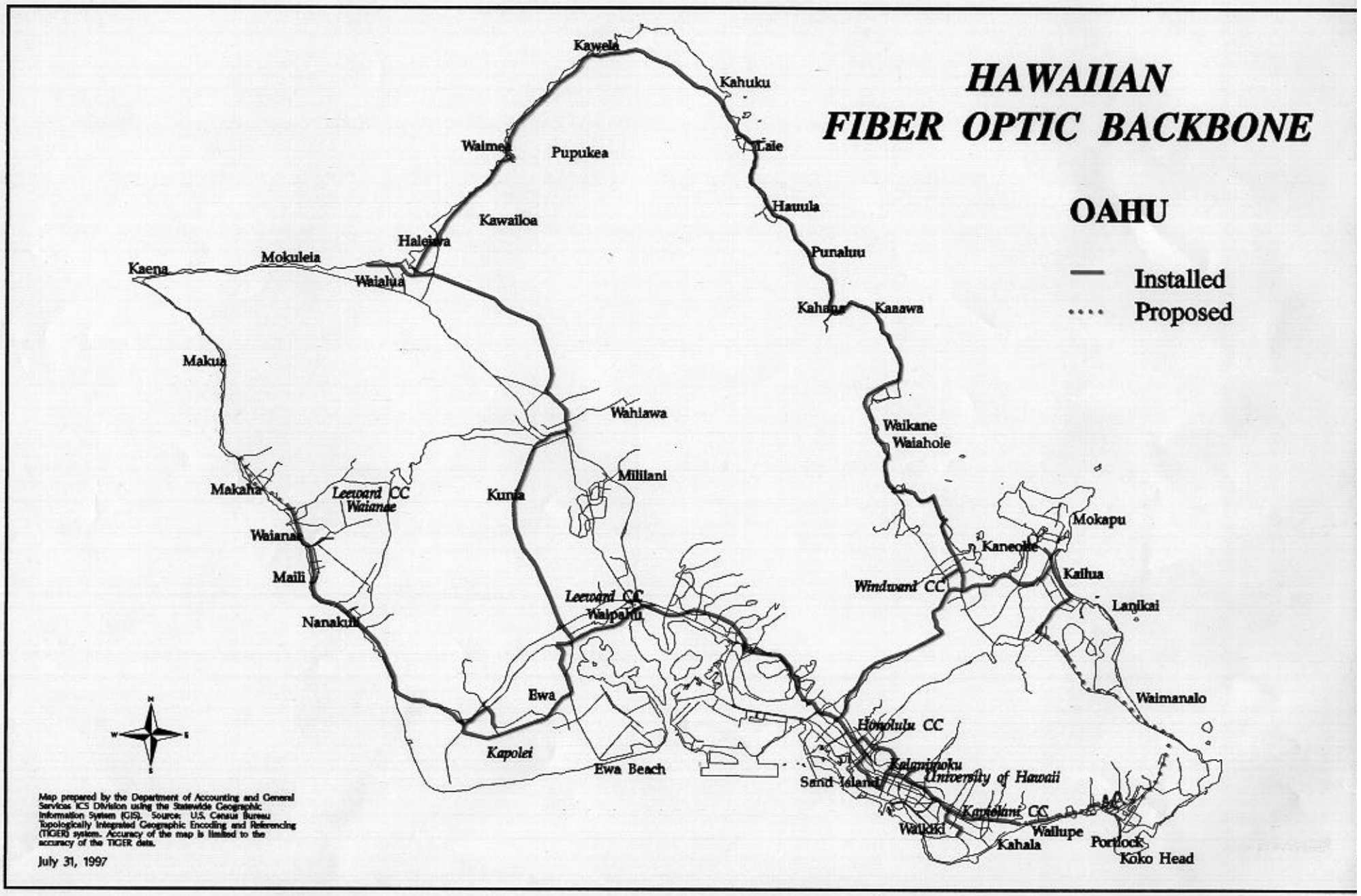
Waihee
Waiehu
Pauwela
Lower Paia
Paia
Haiku
Huelo
Kailua
Mala
Lahaina
Wailuku
Maui CC
Wailuku SOB
Kahului
Puunene
Haliimaile
Keanae
Makawao
Pukalani
Wailua
Nahiku
Olowalu
Olinda
Maalaea
Pulehu
Hana
Kihei
Maui Research & Technology Park
Kula
Hokuula
Hamoa
Waiohuli
Keokea
Puuiki
Haou
Muolea
Makena
Ulupalakua
Kipahulu
Kaupo
Molokini Island
KAHOOLAWE
Keoneoio
Map prepared by the Department of Accounting and General Services ICS Division using the Statewide Geographic Information System (GIS). Sources: U.S. Census Bureau Topologically Integrated Geographic Encoding and Referencing (TIGER) system. Accuracy of the map is limited to the accuracy of the TIGER data.
July 31, 1997

HAWAIIAN BACKBONE



Map prepared by the Department of Accounting and General Services ICS Division using the Statewide Geographic Information System (GIS). Source: U.S. Census Bureau Topologically Integrated Geographic Encoding and Referencing (TIGER) system. Accuracy of the map is limited to the accuracy of the TIGER data.

July 31, 1997


HAWAIIAN
FIBER OPTIC BACKBONE
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Kawela
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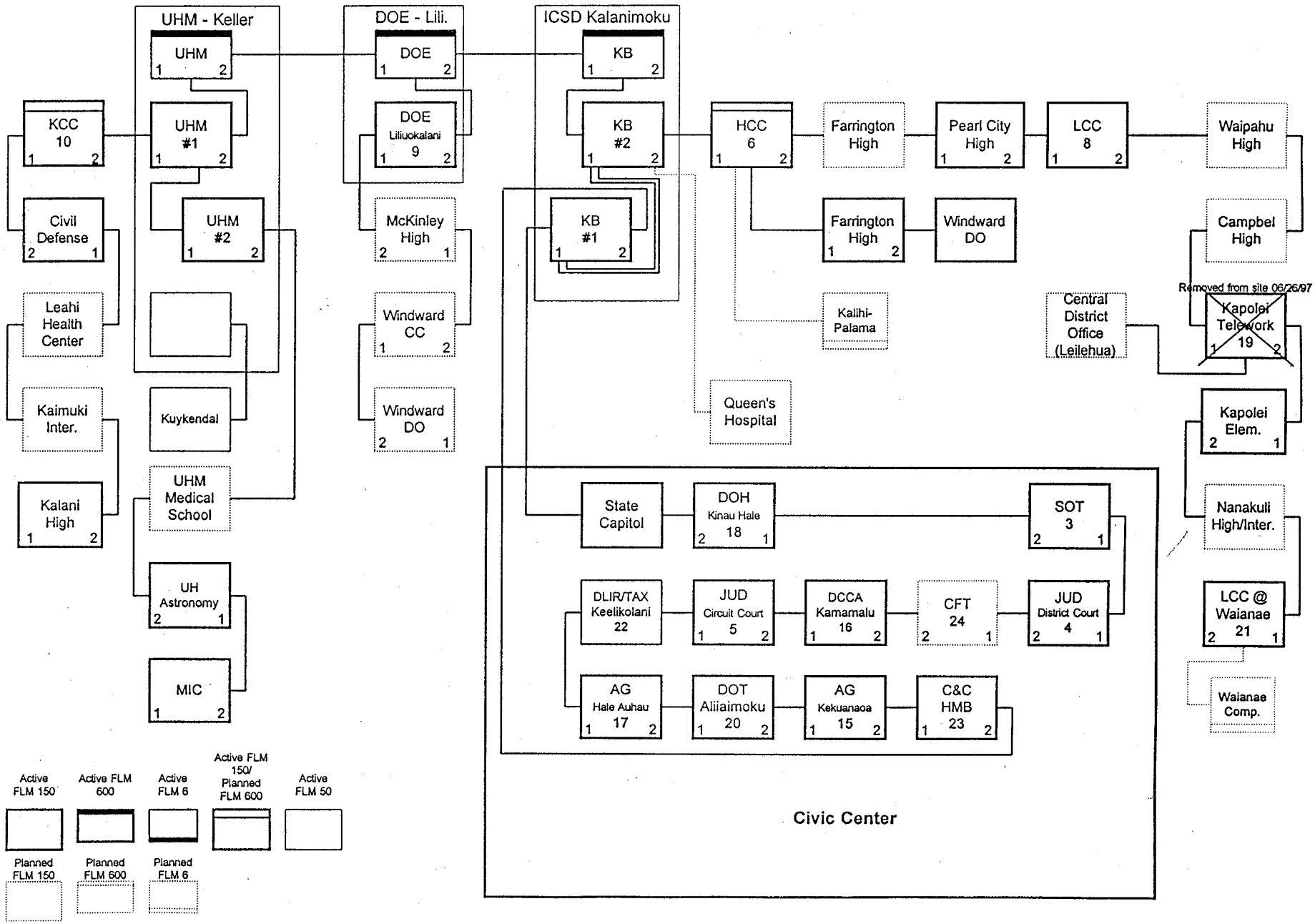
Laie
Waimea
Pupukea
Hauula
Kawailoa
Haleiwa
Punaluu
Mokuleia
Kaena
Waialua
Kahana
Kaaawa
Makua
Wahiawa
Waikane
Waiahole
Mililani
Makaha
Leeward CC
Waianae
Kunia
Mokapu
Kaneohe
Waianae
Kailua
Maili
Windward CC
Leeward CC
Waipahu
Lanikai
Nanakuli
Waimanalo
Ewa
Honolulu CC
Kapolei
Kalaniopuu
University of Hawaii
Ewa Beach
Sand Island
Kapiolani CC
Waikiki
Wallupe
Kahala
Portlock
Koko Head
Map prepared by the Department of Accounting and General Services ICS Division using the Statewide Geographic Information System (GIS). Source: U.S. Census Bureau Topologically Integrated Geographic Encoding and Referencing (TIGER) system. Accuracy of the map is limited to the accuracy of the TIGER data.
July 31, 1997

State of Hawaii

Oahu SONET Network Configuration

08/29/97



SONET & DMIX Nodes Location Table
As of July 28, 1997

Location	SONET Node	DMIX Node	Other T-1 Mux
Kalanimoku Bldg (ICSD)	A	A	
Hawaii State Office Bldg	A	A	
UH Hilo	A		
Kauai State Office Bldg	A	A	
UH Kauai Community College	A		
Maui State Office Bldg	A	A	
UH Maui Community College	A		
State Capitol	A	A	
Hale Auhau Bldg (Dept. of Attorney General)	A	A	
Kekuanaoa Bldg (Dept. of Attorney General)	A	A	
Kamamalu Bldg (Dept of Commerce & Consumer Affairs)	A	A	
Liliuokalani Bldg (Dept of Education & Dept of Human Services)	A	A	
Kinau Hale Bldg (Dept of Health)	A	A	
Keelikolani Bldg (Dept of Labor & Dept of Tax)	A	A	
Aliiaimoko Bldg (Dept of Transportation)	A	A	
Honolulu Municipal Bldg (City & County of Honolulu)	A	A	
City Financial Tower	P		
Circuit Court (Judiciary)	A	A	
District Court (Judiciary)	A	A	
State Office Tower	A	A	
UH at Manoa Keller Hall	A		A
UH at Manoa Medical School	P		
UH at Manoa Astronomy	A		
UH Honolulu Community College	A		A
UH Kapiolani Community College	A		A
UH Leeward Community College	A		A
UH Leeward Community College at Waianae	A		

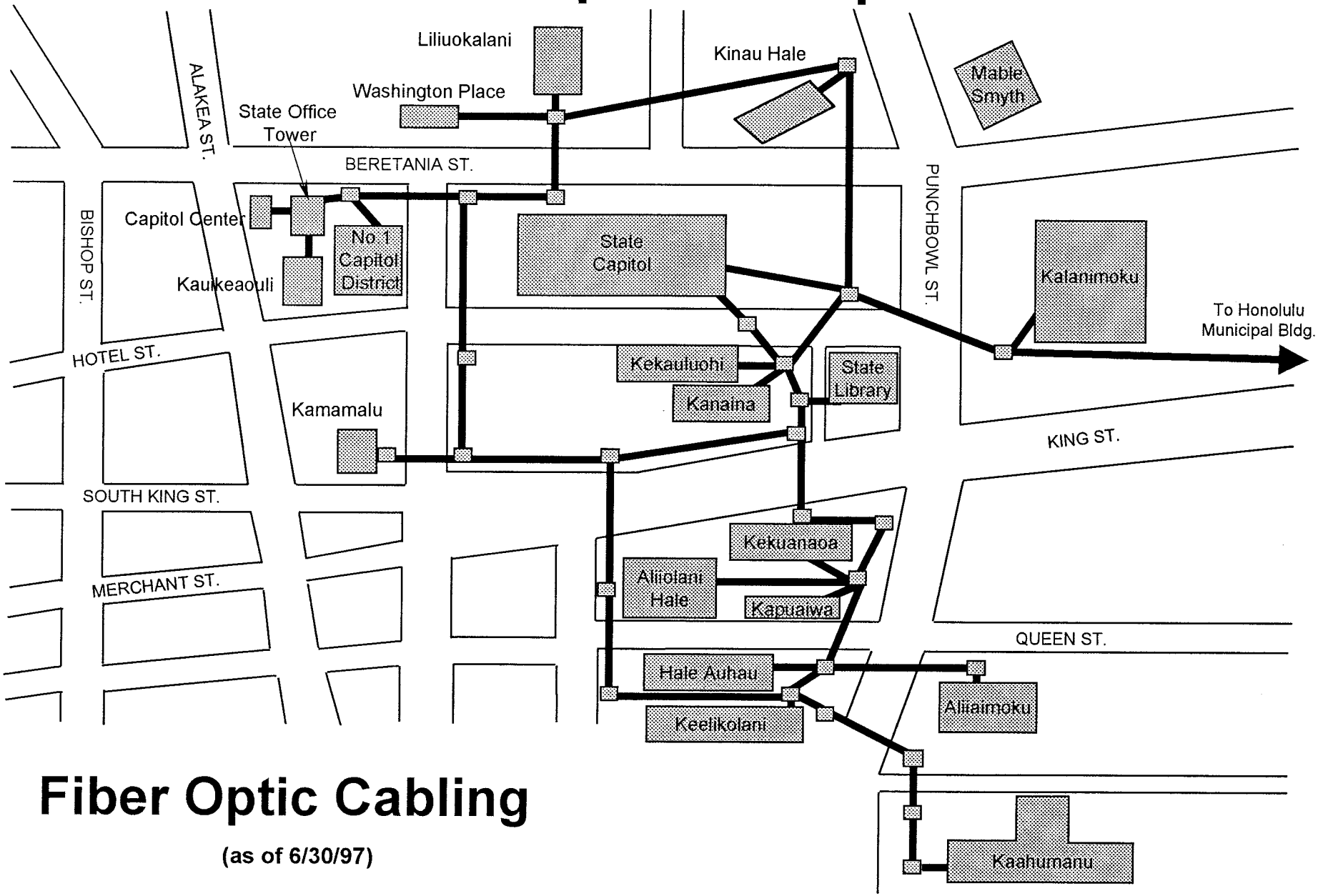
Location	SONET Node	DMIX Node	Other T-1 Mux
UH Windward Community College	P		
Waianae Coase Comprehensive Health Care Center	P		
Nanakuli High/Intermediate School	P		
Kapolei Elementary School	A		
DOE Central District Office (Leilehua)	P		
Campbell High School	P		
Waipahu High School	P		
DOE Windward District Office	A		
Pearl City High School	A		
Farrington High School	A		
Kalihi Palama Health Care Center	P		
Queen's Hospital	P		
McKinley High School	A		
Manoa Innovation Center	A		
UH at Manoa Kuykendall Hall	A		
State Civil Defense	A	A	
Leahi Health Center	P		
Kaimuki Intermediate School	P		
Kalani High School	A		

A = Active Node P = Planned Node

Appendix 4

State Capitol Complex Fiber Optic Cabling

State Capitol Complex



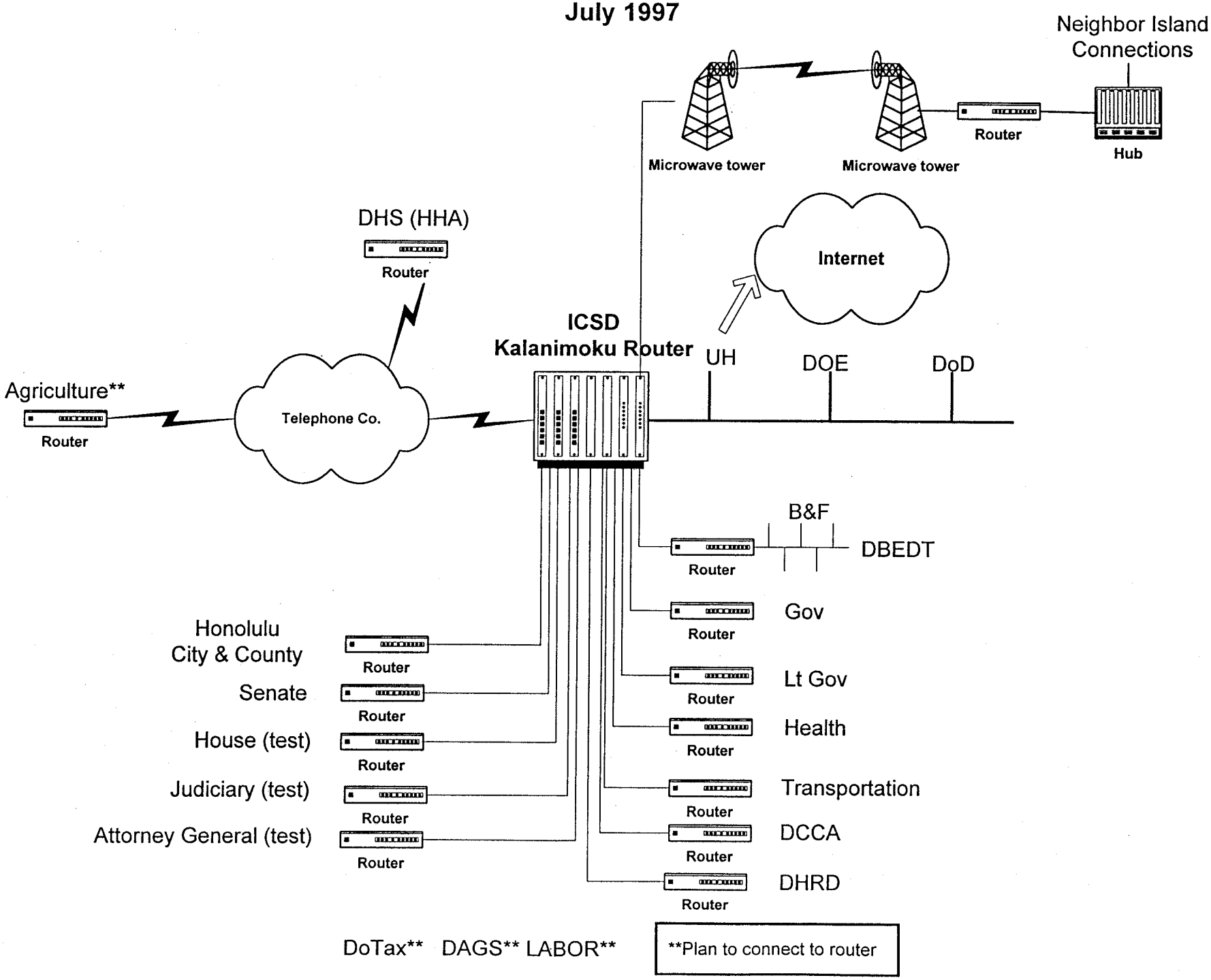
Fiber Optic Cabling

(as of 6/30/97)

Appendix 5

ICSD TCP/IP Based Router Connections Network

TCP/II ased
ICSD Router Connections
July 1997



Appendix 6

ICSD Connectivity Guidelines

ICSD CONNECTIVITY GUIDELINES

1. Wide-Area/Interbuilding

Conduit Infrastructure

- State-owned communications conduit system.
- Public utility right-of-way used by cable television companies.

Fiber Optic Cabling

- Single mode 8 micron optical fiber cables.
- SC connectors.
- Terminated in fiber optic patch panels with pigtails; cross-connect with jumper cables.
- SONET (Synchronous Optical Network) compatible fiber optic multiplexers.

Digital Microwave Systems

- DS3 (45 megabits per second) capacity digital radio with M13 multiplexers.
- 6 GHz long-haul and 18 GHz short-haul frequencies.

2. Intrabuilding

Communications Infrastructure

- Follow EIA/TIA Building Telecommunications Wiring Standards (EIA/TIA 568 and 569).

Communications Cabling Systems

- Follow EIA/TIA Building Telecommunications Wiring Standards (EIA/TIA 568 and 569).
- State guidelines for intrabuilding backbone cabling: 62.5/125 micron multimode fiber optic cabling with SC connectors.
- State guidelines for intrabuilding horizontal cabling: Category 5 UTP (unshielded twisted pair).

3. Data Network/Protocol

- DS1 (1.544 megabits per second) digital circuits.
- UTP (unshielded twisted pair) cable with DB15 or RJ-45 connector.
- DS0 (64 or 56 kilobits per second) digital circuits.
- UTP (unshielded twisted pair) cable with V.35 or RS-449 connector.
- IEEE 802.3 (Ethernet)
- IEEE 802.5 (IBM Token Ring)
- Synchronous
- Asynchronous
- X.25 (Packet Switched Network)
- TCP/IP (Transmission Control Protocol/Internet Program)
- SDLC (Synchronous Data Link Control) used with IBM's SNA.
- HDLC (High Level Data Link Control) protocol similar to SDLC.

Appendix 7

ICSD Internet Services

ICSD Internet Services

Working Draft 8/8/97

The Internet is a valuable tool that State agencies can use to facilitate carrying out their program missions. The Internet allows citizens and businesses to access information and receive goods and services in ways that are better, cheaper, and faster.

Agencies are encouraged to utilize the Internet as a tool for streamlining their business practices, completing transactions without paper, reducing the number of forms and incoming calls, and answering commonly asked questions.

The ICSD requests that agencies using the Internet comply with the following policy:

> **Internet-based government services can and should be utilized by agencies as a means for making government agencies more accessible, more efficient, and more responsive to the needs of other government agencies and the public.**

As a service to State agencies, the Information and Communication Services Division (ICSD) of the Department of Accounting and General Services provides a number of Internet related services to assist agencies to use the Internet. These services are Internet Classes, Internet Publication Services, and Internet Access Services, which are described in more detail below.

1. Internet Classes

The ICSD offers classes to familiarize agencies' staff with the features of the Internet and to teach them how to create home pages for their agency to provide information on the Internet. Internet classes are unscheduled and held only upon request. For an agency to request a class, an ICSD Web Training Request (WTR) form must be completed and signed by the Public Information Officer or Public Affairs officer, Deputy Director, or Director of the agency. To obtain a WTR form, please call the ICSD's Information Resource Management (IRM) Branch at 586-1940. The completed form may be mailed or faxed to:

IRM Branch
1151 Punchbowl St., Room B-20
Honolulu, HI 96813
Fax: 586-1922

A class is scheduled when a sufficient number of students have signed up or 30 days after the submission date of the request, and on the availability of the Digital Media Laboratory at the Manoa Innovation Center. All hands-on Internet classes require students to be able to use a mouse and to be familiar with a Macintosh or PC windowing environment.

The following classes are conducted by ICSD staff at no charge to the agencies:

A. Internet Overview

The Internet Overview is for anyone who knows nothing about the Internet. This one-hour long presentation explains what the Internet is and the many practical applications that can be utilized by departments.

B. Internet 101

Internet 101 covers the basic features of the Internet. Students are taught to use a "web browser" and are taken on a "surfing" trip around the World Wide Web. Students are introduced to a variety of

"search engines" to locate information anywhere in the world, logon to other computers via the Internet's telnet protocol, download files using the Internet's file transfer protocol (ftp), become familiar with the Internet's electronic mail, and collaborate with others in electronic bulletin board type news groups using the Internet's UseNet facilities. This hands-on class is approximately six hours.

C. HyperText Mark-Up Language (HTML)

Because the State government's Internet home page is the major platform for making government information electronically available for its public access program, the ICSD assists agencies in publishing their information on the State's home page. The ICSD offers a basic and an advanced class on HTML, the publication protocol of the Internet's World Wide Web.

After successful completing this six-hour class, students will be able to design, develop, and implement Internet Web pages for their agencies using their own PCs. Web pages created by an agency may then be transferred to the State's Web server for publication on the Internet. The tutorial used in class can be downloaded to diskettes for students to use as a reference when creating Web pages. A Web browser is needed to view the Web pages created. Free and evaluation copies of different Web browsers are available on the Internet which students may download.

2. Internet Publication Services

Advances in technology have made publishing information electronically much easier and requires fewer resources than traditional print methods. Using the Internet as the primary media for the State's public access program, the ICSD assists State agencies to publish their information on the Internet. The ICSD coordinates the use of the State government's Internet home page and the use of the State's Internet Web server for agencies' web pages.

A. Use of the State Government's Home Page

The ICSD operates and maintains the State's Internet home page for the use of all agencies. In June of 1995, the ICSD, in collaboration with the Department of Business, Economic Development and Tourism and the Department of Transportation, created the Hawaii State government's Internet home page to coordinate the publication of Web pages from all State agencies.

The State's presence on the Internet must be professional, comprehensive, and coordinated. State agencies have a responsibility to contribute to a professional and appropriate presence for Hawaii on the Internet by their responsible use of the State's home page.

An agency's home page may reside on any server connected to the Internet. The home page could be on the agency's own server, another agency's server, a private Internet Service Provider (ISP) server, or the State's Web server. If an agency's home page does not reside on the State's Web Server, the agency needs to submit the URL of its home page to the ICSD's IRM Branch so it can be linked to the State's home page.

1. How To Include an Agency's Home Pages with the State Government's Home Page

To have their home pages included in the State's home page, agencies are asked to complete an ICSD Service Request (S-1) form for the initial request, with an attached Web Service Request (WSR) form. The S-1 form must be signed by the Departmental Data Processing coordinator. The WSR form must be signed by the Public Information Officer or Public Affairs officer, Deputy Director, or Director of the agency, to ensure that the publication has been coordinated agency-

wide. Both forms must be submitted to the ICSD Administrator. The address of the home page must be included on the WSR if the home page will not be located on the State's Web Server.

2. Internet Addresses for Agency Home Pages

The Internet address or URL for the State government home page is:

http://www.state.hi.us

URL's for agencies' home pages located on the State's Web Server are to be related to the URL of the State's home page. For example, the URL for the Office of Elections is:

http://www.state.hi.us/elections

For agencies whose home pages will be on their own servers, the URL will use their server's name in place of the "www". For example, the Campaign Spending Commission maintains its own Internet server whose URL is:

http://csc.state.hi.us

URL's are easy to remember names within a domain name system for Internet Protocol (IP) addresses assigned to a computer, server, PC, or terminal connected to the Internet. Domains are "us", "gov", "com", "edu", "org", "net", etc. IP addresses are lengthy numbers unique to each computer connected to the Internet throughout the world.

3. State Government's Domain Name System (DNS)

The ICSD operates and maintains the DNS for State government IP addresses. The Hawaii state government's domain name is:

state.hi.us

The ICSD IRM Branch works with agencies to create domain names for the agency's IP addresses and includes them in the DNS. Departments requesting a domain name need to send a memo to the ICSD Administrator.

4. Agency's Home Page Responsibilities

a. Agencies are requested to establish a coherent strategy on matters such as the scope, style, and substance of Web documents. Web documents need to go through the same kind of pre-publication approval process as any printed material published by an agency.

b. Web documents need to be reviewed at regular intervals and checked for continuing accuracy and consistency with the style agreed upon. Dates for updates made to printed material should be reflected on an agency's web site.

c. Agencies must accept full responsibility for the design, content, and accuracy of their pages. Agencies are expected to spot check and monitor their pages daily or as often as they can to detect tampering, changes, or deletions which may have been introduced by hackers. Evidence of tampering must be reported immediately to the ICSD IRM Branch by calling 586-1940.

d. In accordance with acceptable practices, agencies should seek to link with Internet sites of other states and local governments to take advantage of information there.

e. Agencies should not provide links to private businesses, unless all such businesses are treated equally or the reason for the link is primarily educational in nature and is not perceived as an endorsement.

B. Use of the State's Web Server

Agencies that do not have the resources or expertise to install, operate, and maintain their own Web server for their Internet publications are invited to use the State's Web server. The ICSD operates and maintains the State's Web Server which is available 24 hours a day, 7 days a week on a Sun Microsystems Unix computer.

The State's Web Server is located outside of the State's firewall so that publications located there are available to anyone on the Internet. Confidential or sensitive information will not be published on this public Web server.

Because it is a public information server, it is dynamically backed up to magnetic tape nightly, except on weekends and holidays. Data accidentally lost by the agency, tampered with, or destroyed by hackers can be restored as long as it was archived within the previous two months. As stated above in II.A.1.3, any evidence of tampering must be reported immediately to the ICSD IRM Branch by calling 586-1940.

For security reasons, agencies must submit all Common Gateway Interface (CGI) scripts to the ICSD Webmaster for review and approval before implementation. Unchecked CGI scripts may potentially cause problems in the server.

Because of the large amount of disk space used by audio and video clips, agencies must first discuss their requirements with the ICSD. Agencies may be required to supply the disk space needed to implement audio and/or video clips in their web pages.

The ICSD, upon request, will provide agencies with activity statistics on their home pages.

3. Internet Access Services

The State of Hawaii can derive many benefits by providing Internet access to *employees who can utilize* the following benefits of Internet access to improve job performance:

- Use of retrieval tools to find a great variety of research information, including vendor/product information.
- Exchange of articles, ideas, questions, etc. with thousands of special interest groups.
- Sending of e-mail and attachments to associates throughout the world on a variety of systems connected to the Internet.
- Downloading of public domain software, software patches from vendors, and other information from a variety of sources.
- Ability to login to and run programs from remote computers.
- Have interactive discussions with other Internet associates around the world.

The ICSD offers agencies two types of connections to the Internet: **Online and Dial-up.**

A. Online Connection via the State's Router Backbone Network

The ICSD provides direct online access to the Internet to agencies' local area networks (LAN) or stand-alone PC clusters. Direct on-line access is provided via the State's router backbone.

The Hawaii State government utilizes the University of Hawaii (UH) as its ISP. The UH has four T-1s (1.544 MB) link to its Internet provider in California. This link is shared by UH students and State government users, including the Department of Education staff and students.

The ICSD operates and maintains a router backbone (network) that connects routers from various State departments to the UH. Agencies may connect their LANs or clusters of stand-alone PCs to their department's router that connects to the State's router network. Agencies may also connect to the Internet via the State's HAWAIIAN or through a public carrier. Because of limited resources, there is a limit of one connection per department to the ICSD router backbone. Agencies within a department must coordinate their access through the department's data processing coordinator or telecommunications coordinator.

1. How to Obtain an Online Connection to the Internet

Departments requesting an online connection to the ICSD's router network to the Internet are asked to send a memo to the ICSD Administrator with the number of IP addresses needed. In addition, the following may also be required:

- A diagram of the agency's network showing all existing connections
- A Telecommunication Request (TR) form for the purchase of telecommunication equipment or leased line services
- A SONET/DMIX Request form

Departments must provide their own routers. The ICSD will provide the necessary information and expertise to assist the agency in making the connection.

2. Policy/Guidelines for Online Internet Access

Usage

Agencies and individuals with Internet access via the State's Internet connection are expected to utilize the Internet for job-related research, education, and communications.

The proper use of the Internet by its employees is each agency's management responsibility. Each agency is expected to publish its own policies and guidelines for Internet usage for their employees to follow, and provide the necessary training and support activities for their proficient use of the Internet.

Security

Agencies are responsible for the internal security of their own networks. Security and virus threats are real. Agency networks are vulnerable when connected to the Internet. The use of the ICSD's planned firewall and/or an agency's own firewall to protect the network is recommended when connecting to the Internet. A PC on an agency's network with a modem that is used for a dial-up connection to an ISP, bypassing the network's firewall, presents a security threat to the network. However, individuals with PC/modem connections may use their modems and telephone lines to access other electronic services that are not on the Internet. These individuals must agree not to access the Internet via their modem connections, even if their agency's on-line router connection is down.

The risks of an agency connecting its network to the Internet must be weighed against the benefits. The ICSD plans to install a firewall which agencies may use. However, agencies should seriously consider installing their own firewalls to protect against security breaches, accidentally or intentionally, from other agencies.

Firewalls are used to prevent any unauthorized access into a network. Firewalls do not prevent the introduction of viruses that may accompany legitimate access. Thus, agencies must have virus prevention, detection, and removal procedures and software in place on their networks before connecting to the Internet. Firewall checking procedures must also be implemented by the firewall operator to detect any breaches to the firewall. Additionally, users should backup their data regularly to protect against data loss or corruption.

B. Dial-Up Connections to the Internet via the Hawaii FYI Modem Bank

The ICSD will be providing two types of dial-up connections to the Internet via the Hawaii FYI modem banks:

1. Limited Text-Only World Wide Web Access via Hawaii FYI

Text-only World Wide Web access to the Hawaii State Government Home Page is available via the Hawaii FYI modem banks. Access to services on the Hawaii State Government Home Page will be via the Lynx browser, which displays text only, no graphics. The World Wide Web's Lynx Browser is provided to Hawaii FYI users to view the text only information of Web pages. Images on the Web pages accessed will not be viewable. Brackets with the word "IMAGE" or "INLINE" or "ISMAP" will take the place of an image, icon, or map.

The Lynx Browser has a command line at the bottom of each page to help you navigate through Web pages. Help for using Lynx can be selected from the command line. If you are lost in a succession of linked Web pages, key in "q" (quit) and press return to go back to the Hawaii FYI Web Page Services Menu.

Dial-up connections are toll free throughout the state. The Hawaii FYI dial-up numbers for all islands are as follows:

Hawaii	974-6640
Kauai	274-3600
Lanai	1-800-243-7133
Maui	984-2000
Molokai	1-800-243-7133
Oahu	587-4800

2. Point-to-Point Protocol (PPP)

The ICSD is currently piloting a Point-to-Point Protocol (PPP) dial-up connection using the Hawaii FYI modem banks and terminal servers. The ICSD plans to offer this service when more resources become available.

Individuals granted dial-up connections will be provided a PPP connection after properly logging in to the terminal server with the assigned identification code (id) and chosen password. The Hawaii FYI modem banks utilize 9.6 KBps modems (9600 bauds) adjusted to operate faster than rated.

Dial-up PPP connections can be used by agencies that are not ready to connect their networks or a cluster of stand-alone PCs to the Internet via the ICSD's router network. Dial-up connections are toll free throughout the state.

Agencies must provide their own PCs, modems, telephone lines, Web browsers, and TCP/IP software for their dial-up connections.

Internet access will not include e-mail. WWW, UseNet News, ftp, and telnet will be available to the users. If e-mail privileges are desired, refer to "Use of the ICSD's Internet Electronic Mail Server Facilities" in Section C below.

3. Policy for Dial-up PPP Internet Connections

Usage

The Internet connection and services are provided for the efficient exchange of information and for the completion of assigned responsibilities consistent with the agency's statutory purposes. Use of the State's Internet connection for personal use at the office or at home is prohibited.

Security

A dial-up connection to the Internet from a PC on a LAN is a security risk to the network. Internet access via stand-alone PCs is not a threat to the agency LAN.

C. Use of the ICSD's Internet Electronic Mail Server Facilities

The ICSD offers the use of its Internet Electronic Mail (e-mail) Server facilities to individuals authorized by their agency's management. Currently, only a limited number of dial-up accesses will be permitted until more resources become available. Internet e-mail processing also requires special e-mail software and additional disk storage space to store the mail.

1. How to Obtain Use of the ICSD's Internet E-mail Server

Departments requesting Internet e-mail need to send a memo to the ICSD Administrator.

A logon id code and password will be provided to each user authorized by the agency to have Internet e-mail. Users are fully responsible for their logon ids. Logon id codes and passwords must be kept confidential.

2. Policy for the Use of the ICSD's Internet E-mail Server Facilities

The ICSD's Internet E-mail Server facilities will be made available to individuals authorized by their agencies that have either an on-line or a dial-up Internet connection through the ICSD. Only a limited number of e-mail users will be accepted. Acceptance will be based on the individual's need for the service and the availability of the ICSD's resources. E-mail services will be evenly distributed among departments. More users will be accepted as funds become available to acquire additional hardware for expansion.

Each agency's management is responsible to ensure that individuals abide by the principles for acceptable use adopted by the ICSD. Ultimately, the content and maintenance of an individual's Internet electronic mailbox is the responsibility of the individual.

Individuals must be aware that there are no facilities provided by the ICSD for sending or receiving private or confidential e-mail. The ICSD cannot guarantee the privacy of e-mail. If messages related to, or in support of, illegal activities are discovered, the ICSD will report the individual to the appropriate authorities.

The ICSD Internet E-mail Server does not scan e-mail for viruses. It is an individual user's responsibility to exercise caution and to check for and recover from viruses. The ICSD will not be responsible for any damages caused by viruses.

Individual accounts will be allocated two megabytes of disk storage. The individual is responsible for the management of this assigned space to ensure there is space available for incoming mail. The ICSD will not be responsible for e-mail that is lost because of space problems. It is recommended that e-mail be deleted after a week.